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THE PRINCIPLES OF RHINOLOGIC PRACTICE.*

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Among the textbooks which the medical student possessed a third of a century ago was William's Principles of Medicine. In latter-day medicine the principles of practice are not in evidence as an independent proposition, but are embodied in the broader field of practice itself. Notwithstanding this present-day custom, the former plan appeals to the reason as being both rational and wise. With this line of reasoning I have thought it might be instructive to give some attention to the Principles of Rhinologic Practice.

In a general way, it may be said that idealism is the goal aimed at in the practice of medicine. Surgeons, in all departments of practice, aim to get the diseased or deformed part in such condition that it will physically conform as nearly as practical to the normal. Every effort of the dentist is to get the dental arch, and each of its individual teeth, and their surroundings, to conform as nearly as possible to the ideal standard, or to the set of perfect teeth which he ever has pictured in his mind, and in order to do this he drills away decayed tissue and fills the cavity preferably with gold, so the ideal form is preserved; he straightens the teeth when irregular, and, if necessary, extracts any that are superfluous, with the object of getting the arch to conform in shape to the ideal standard; and, furthermore, when

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the gums are diseased he applies treatment thereto, with the same general object in view. Later on, when the dental loss is greater, he resorts to crown or bridge work, and eventually to artificial dentures, each and every step being with the same object in view, viz.: That the resulting work shall imitate as nearly as practical the perfect teeth of ideality.

The emmetropic eye is a perfect optical production, and as the eye is mated the pair should work in unison. Lack of balance or parallelism, known as insufficiency, or intrinsic optical defect, constitute the causes for the refractive errors which contribute so largely to the financial support of the ophthalmologist. In his work of correcting these errors, largely by the aid of lenses, his aim is to neutralize the optical defects and cause the eyes as nearly as possible to stimulate the emmetropic standards of perfection. Similar examples could be cited in other fields of medical practice.

In the same way, the writer is an advocate of idealism in rhinologic practice, and as structural deformity of some kind will be found present in the noses of all, or nearly all, who apply for relief from nasal troubles, the rhinologist will do his patients the greatest amount of good by taking such steps as will cause the nasal passages to resume the conformation and patency of the ideal standard. By this statement is not advised an invariable and wild rush to surgical steps, but there is contemplated the employment of all topical, systemic or hygienic means which will singly or jointly contribute to this end, remembering that improvement of the general health always affects favorably the conditions of local parts.

As a preliminary step, in order to follow the principle of practice outlined, it becomes essential for the rhinologist to decide the question as to what constitutes an ideal or perfect nose. It is quite evident, from the varying methods of treatment recommended by different authors, that there is not an unanimity of opinion as to this matter, or else its consideration is neglected. Until this moot matter is settled, so the perfect nose is an accepted fact, the same as is the perfect set of teeth with the dentist, or the emmetropic eye with the ophthalmologist, the rhinologist will be at sea, as the mariner without a compass. On the other hand, with this question settled, rhinologic practice will be elevated from the plane of empiricism to that of scientific exactness.

The writer has for a long while had his idea of the perfect nose, and has in a previous paper, written several years ago, outlined his understanding thereof,¹ hence liberal extracts will be made from this alluded to paper, as the observations of recent years have but

slightly modified the original proposition. In the ideal nose the septum is practically plane, and vertically divides the organ in two passages of equal calibre, which passages have jointly a sufficient capacity to at all times easily supply the requirements of nasal respiration.

While the septal wall is plane, the outer wall in either nostril carries three turbinals or scrolls, which are practically horizontal when the patient is upright, and which, by their tortuous convolutions, add materially to the area of mucous membrane lining the passages. The openings to these passages, both anterior and posterior, being less in area than is a cross-section at any intermediate point, a slight obstruction near either end will often cause more annoyance or stoppage than will even a larger growth when located elsewhere in the passage, and, more particularly when at the anterior end, owing to the mobility of the *alæ nasi*, by impeding inspiration will tend to induce alternate rarefaction and condensation of air in the post-nasal space, which is probably an etiologic factor in the production of posterior white hypertrophies of either the turbinals or upon the vomer, as well as a recognized cause of tubal congestion. In fact, aspiration has much to do with the causation of anterior turbinal intumescence. A feature of particular and vital importance possessed by a normal nose is that no two opposing surfaces therein ever touch, hence the ventilation in all parts thereof is always free. With these physical qualifications as outlined, the drainage will also at all times be perfect.

While the septal wall of the nasal passage in an ideal nose is practically a straight line, which it will be remembered is a characteristic of a perfect highway, built in conformity with the geometric principle that a straight line is the shortest distance between two points, still, as with the highway, which is serviceable even though it possess moderate grades and gentle curves, so long as its surface is of sufficient width to meet the demands of its traffic, so with the nose, for whenever its calibre at all points is sufficient, it will meet the demands of respiration, even though the septal line be not straight, so long as the prominences are not abrupt, nor too great, and so long as opposing surfaces do not touch, and thus impair its essential features of ventilation and drainage. There is thus additionally given proper vocal resonance, for the free and unobstructed nose may be regarded as the sounding-board of the voice.

Ample "breathway" has been regarded as the chief requirement by many rhinologic writers. It is apparent that more than this is required, for excessive space at one portion of the passage does not

atone for a stenosis at another point. The essential requirement is that the circulating air can penetrate all portions of the nasal fossæ and at all times. The turbinals, through congestion, become more or less distended and require sufficient space in which to attain their maximum size, but should never at such time touch either each other or any opposing surface. The inferior turbinal, being the most erectile, requires the greatest amount of surrounding space. When most reduced in size, as when the patient is in a warm room, or in the examiner's office, there should be about it a space of from one-eighth to one-quarter inch, and, as the anterior end thereof is the most erectile, it is at this end where the greatest space is required. Between the middle turbinal and the septum, as seen by anterior rhinoscopy, there should be a space ranging from one-twentieth to one-twelfth inch, for the variation at different times in the size of this body is slight as compared with the inferior turbinal.

Under the stimulus of either cold, dust or irritating vapors, the turbinals become more or less distended, so as to diminish the lumen of the nasal passages, and thus cause the inspired air to pass through in a thinner column, whereby it is the better warmed. Simultaneous with the swelling of the turbinals, the nasal secretion is increased in quantity, so as to better humidify the air, and also attract the dust or cause its precipitation. Furthermore, the evaporation of this secretion is more rapid, owing to the increased rapidity of the air current through the diminution of the calibre of the passages from the swelling previously alluded to.¹

It has been noted that the septum should be practically plane. Any material variation therefrom produces in one nostril or the other points of prominence against which the inspired air strikes with more force than when the surface is plane. As a result, the mucous membrane at such points is chronically irritated, and often dry, and invariably shows irritation by an increased redness. The further forward, or more abrupt, these prominences are, the more annoyance produced thereby. In the normal nose, the mucous membrane should at all times have a pink color, much like the roof of the mouth, and there should be no points of excessive redness, or locations which appear dry, or seem to invite the retention of visible secretion.

Septal prominences deviate the inspired air from the course it should take, and also encroach upon the space about the turbinals so as to interfere with their physiologic congestion and thus cause respiratory insufficiency. In this way a touching or even pressure may be produced when such congestion occurs. A septum abnormally

thick, and yet plane, may in the same way diminish the calibre of the passages, so as to cause nasal occlusion. The congenitally narrow nose is the most unsatisfactory of all to treat.

Abnormalities of the nasal septum are, in adults, the most common causes of nasal obstruction, and their correction, when feasible, is to be always preferred, instead of making destructive attacks upon the vital turbinals. Very slight prominences, when well forward, which would seem to be absolutely harmless when turbinal congestion has subsided, and when the opening to the nostril is distended by the use of a speculum, are frequently the cause of chronic irritation, as has been often proved by the beneficial results following their destruction.² Perforations of the septum are another source of annoyance, and are generally well forward in the cartilaginous portion thereof, and are not specific in character, but have been caused by picking the nose when a deflection exists. After the perforation is produced, its chief annoyance, when well forward, comes from marginal dryness or scabbing, and is principally due to a prominence upon or thickening of the septum close by, which, when destroyed, so there remains only a perforation in a plane septum, it will be found to give but slight annoyance.

Next in importance to septal deformity as a cause of nasal symptoms may be mentioned hypertrophy of the anterior end of the middle turbinal, so it impinges against the septum, causing either simple contact, or contact with pressure, and which alone, or in combination with septal prominences,^{3,4} occludes the attic of the nostril, and by impairing its ventilation induces catarrhal sinusitis, which through neglect may in time become empyemic, and which is the great cause of post-nasal catarrh. When pressure occurs in this region of the nose, various reflex symptoms may become manifest.⁵ The enlarged middle turbinal may also extend downward, and thus press against the inferior turbinal, so as to occlude the middle meatus, thereby affecting the sinuses connected therewith. Cobb⁶ has called attention to this fact, and that the under scroll of the middle turbinal may be so large as to not only press against the inferior turbinal, but also form a gutter, which conducts the discharges from the antrum of Highmore, the anterior ethmoid cells or the frontal sinus, so as to reach the naso-pharynx and appear as a post-nasal catarrh. In such case there is no discharge visible by anterior rhinoscopy.

It is now known that the course of the air current during respiration is largely through the upper part of the nose.^{7,8} The horizontal plane of the anterior openings to the nose, as well as the curve of the pharyngeal vault, both contribute to this end. In its passage through

the upper part of the nose, owing to the greater narrowness of the passages therein, it is forced to pass in a thinner stream, and is therefore the better warmed. Furthermore, the diminution in the volume thereof tends to increase its speed, the same as the slow current of a broad stream increases in velocity when passing through a narrow gorge. A patient with attic occlusion will often complain of a sensation of inability to breathe through the nostril, even though the lower portion thereof appears free. As the openings to the accessory sinuses are all located in what may be called the attic of the nose,⁴ and as these sinuses are each ventilated through a single opening, such ventilation is best secured by the to-and-fro motion of a more rapid air current, which is happily attained in the way previously outlined.

Another disadvantage of attic occlusion is that all the inspired air is forced through the lower portion of the nose, which thus tends, through excessive stimulation, to induce congestion, and, in time, hypertrophy of the inferior turbinal, hence the importance of correcting attic stenosis. In fact, if atrophy is to be regarded as a degenerative successor to hypertrophy, then attic occlusion may be regarded as one of the etiologic features in the production of atrophic rhinitis.

During nasal respiration, as has been previously noted, the inspired air becomes warmed, humidified and freed from impurities, and the nearer perfect the nose is, the better are these functions performed. It has been assumed, owing to its increased power to become congested, that there is thrown out from the inferior turbinals the greater part of the nasal serum which renders humid the inspired air. In its passage through the middle meatus, the air current absorbs moisture from the upper surface of the inferior turbinal. It is, furthermore, quite probable that the sinuses contribute their quota of moisture, which is evaporated by the passing air current, so as to increase its humidity.

Among the defects of the nose commonly observed, occlusion may be considered of the most importance, and varies from being complete to being so slight that the patient is not conscious thereof. Frequently "the two nares are unequal in size, one being stenosed. In such case the other is compelled to do the greater part of the work, and may thus be so overworked that it cannot properly fulfill its physiologic functions. While secreting only enough nasal fluid to properly humidify one-half of the air inspired, it is giving entrance to much more than half of the air required; hence this air is not sufficiently humidified and, as it enters in too large a column, it is likewise not so well warmed. Furthermore, the volume of air enter-

ing the more roomy nostril tends to dry the mucous membrane therein to an abnormal degree and is harmful; therefore, it is as essential that the normal nostril shall not be too roomy as that it shall have adequate patency.¹ A stenosis of one nostril will frequently cause hyperemia of the other nostril, even though it be free from structural defect, and contact in either nostril generally means contact at some point in the other nostril, hence alternating stenosis is frequently noted," as well as a periodic susceptibility to attacks of acute coryza.

One of the most important of the nasal defects is the condition wherein a partial stoppage of either one or both nostrils exists, though the same is *unrecognized by the patient*, and any or all reflex symptoms or troubles present, and due thereto, are attributed to other causes. In this condition, there is a touching of opposing surfaces at one or more points, and at the same time a compensatory increase of size elsewhere. In such case, upon inquiry, it is learned that certain reflex or secondary symptoms are complained of, which the experienced rhinologist will at once, and correctly, attribute to the defective nose.

Next in importance to occlusion, and largely secondary thereto, owing to impaired ventilation and drainage, we have excessive or abnormal nasal secretion. Nasal obstruction, particularly when contact of opposing surfaces exists, interferes with the normal evaporation of the nasal muco-serum, which is normally secreted by the nose to the amount, approximately, of one pint a day. When evaporation is interfered with, or prevented, the retained secretion becomes more or less inspissated, and, through retention, is irritating to the mucous membrane at that point, causing further secretion therefrom to be abnormal and thickened, so it cannot be easily evaporated, as is the case with the normal nasal serum. As a result of long-continued irritation, tissues in the nose, particularly of the turbinates, may become chronically relaxed and baggy, so as not to contract under cocaine, being a true hypertrophy or degeneration, and, as such, give out increased and abnormal secretion, and must, therefore, be surgically attacked. The systemic effects upon both the pulmonary and gastro-intestinal tracts from the descent of catarrhal secretions are only too well known.²

As the tenor of this paper is to emphasize the fact that structural deformity is almost invariably present in diseased conditions of the upper air passages, it is an easy step to infer that the chief indication is to cause the several parts to assume as nearly as practical the contour and character of the ideal standard, which implies the re-

moval of all obstructive, redundant or pathologic tissues, the correction of deformities, and, in the nose, to secure appropriate space between all opposing surfaces. Of course, each case is a rule unto itself, and hence practicability must be the guide. When this much is done, it will be found that Nature will do the rest, in a great majority of all cases presenting themselves for treatment.

Preceding the surgical work, certain preliminary steps should be taken. The specialist should not blind himself to mal-conditions outside of his particular field, hence, if there be a call for systemic medication, it should be administered. Attention should also be given to the patient's hygienic surroundings and habits of life. As cleanliness is the keynote of modern surgical practice, the nasal toilette should be well looked after, which, in the writer's experience, is best accomplished by the hourly sniffing of a bland alkaline solution of the same specific gravity as the nasal serum, which is 1015°, and according to an exact method elsewhere described,^{10 11} which can be followed, unless marked occlusion exists. This alkaline solution is regarded simply as a cleansing agent—a suitable soap for the mucous membrane of the nasal passages—and contributes only in this way toward a cure, and its hourly employment is in line with the known efficacy of the small dose, frequently repeated. In case of atrophic rhinitis, the sniffing medicine will have to be supplemented for a while with the use of a tepid nasal douche, twice or thrice daily.

The occasional use of a suitable pocket inhaler¹² will also assist, as vapors more readily penetrate the higher and narrower recesses. The systematic use of this home treatment advised, in addition to a few office treatments with sprays and pigments, will in a week or ten days' time prepare the nose for operative steps, and will often cause the subsidence of points of intumescence, which at the time of the first examination seemed to require operative attacks. The use of the alkaline sniffing medicine is to be kept up during the entire course of treatment, and is as efficient in keeping the parts clean after operations as it is in the preliminary preparation.

A word must also be given to the question of blowing the nose, which, when correctly done, is one of the most efficient methods of cleansing. Use of the handkerchief is undeniably more esthetic, and will do as a makeshift at times, but, for thorough cleansing, the nose should be blown without the use of a handkerchief, and at first with both nostrils open, a short vigorous expulsive blow being given, and, if necessary, repeated two or three times, the patient meantime stooping forward over a wash-basin or sink, with head

thrown well back. After this the head should be inclined forward and each nostril blown alternately by closing the opposite one, in the usual manner, only much less force must be employed than when both nostrils were open. In this way there is no danger of injuring the ears if the nostrils are not too much occluded, and the great advantage lies in the fact that by this method air is made to pass so quickly by the openings of the sinuses that if there be catarrhal secretion therein, which is so often the case, it will thus be drawn out and expelled. This method of blowing the nose may be practiced two or three times a day, and will generally insure a free nose for several hours, or one which can be easily cared for by the handkerchief.

During office treatments, compressed air, either plain or in the form of a nebula, properly directed through a long, slender and slightly curved tip, particularly after a partial removal of the middle turbinal, will often prove more efficient in cleansing an empyemic sinus than will an aqueous injection. Recent experience with heated air has given promise of its great value in all cases wherein either hyperemia or excessive secretion is observed. An advantage in the practice of Politzerization, derived from the air douche, is its cleansing effect upon the nasal passages, and when, at the same time, both external auditory canals are tightly closed, a nebula may be easily driven into the sinuses, thereby giving magical relief from the oppressive headache, due to sinus occlusion, which often accompanies acute coryza.

After intranasal operations wherein the deeper structures are wounded, I have found, in addition to the home treatment, that a one per cent. hot carbolized douche, used from three to eight times daily for a few days, will allay the inflammation, and reduce the reaction to a minimum.¹³ Latterly, I have had made a long oval tip, which can be introduced far back in the nostril, whereby the efficiency of the douche is increased. This douche can even be employed after the slighter operations, and in order to insure its correct use, I give the patient a printed sheet of directions.

At all times, in intra-nasal surgery, it is the wisest plan to do but little at a time, and allow each wound to be well on the road toward recovery before the next operation is made, particularly when in close proximity to its predecessor. Aside from the demands of urgency in special cases, it is generally wisest to first operate those defects which are most accessible, as anterior septal deformities and tonsillar or post-nasal abnormalities, after which the tolerance of the patient is increased, so suitable attacks can be made, when required,

upon occlusions farther in and higher up, in order to insure the necessary freedom in attic ventilation and drainage. In correcting nasal defects, it is generally best to select the better nostril for first attention, and after it is in satisfactory condition it will serve for respiratory purposes, while the other nostril is being operated. It is, though, necessary that all obstructions be removed, for one stone left remaining in a gutter will obstruct it nearly as much as when there were several; or, again, as a further comparison, if a leaky roof be repaired in all but one spot, the leak at this point may cause nearly as much annoyance as did the several leaks before.

In the way of surgical work, the obliteration of slight prominences of the nasal septum is often as essential as is the correction of the grosser defects.² The explanation is that, in case of the latter, compensatory defects are in time created, while the slighter deformities only cause chronic irritation, which may be of many years' duration. When operating a large ridge, there is often less annoyance in removing one-half thereof at the first sitting, and the remainder two or three weeks thereafter. Thus, in some cases, after removing the lower portion of a ridge, when the mucous membrane of the remaining portion is uninjured, it holds away the opposing turbinal and helps toward quick healing. It frequently occurs that the upper margin of a ridge is soft or compressible. If so, such portion had better be first destroyed with the electro-cautery, when, after a week's delay, the remainder thereof, being bony or cartilaginous, may be removed with the saw. In fact, a slight incision with the cautery point may be made both below and above, just before using the saw, and will materially assist toward the diminution of hemorrhage.

Another time, when the operation can wisely be divided in two steps, is when removing the excessive tissue upon the convex side of a deflected septum, the concavity of which is gently curved. During the first operation the saw is held parallel with the anterior half of the concavity in the opposite nostril, while during the second operation the opening of the nose is so pulled away from the septum that the saw can be held parallel with the posterior portion of the concavity. In order to know more exactly the thickness of the parts being operated, a septometer should be used.¹⁴ By operating as suggested a simple deflection will remain which may afterward be corrected by an Asch or Gleason operation, though, when the concavity is not too pronounced it will often be found, by removing the thickened convexity, as described, that the lumen of the nostril on that side is increased to such a degree as to give comfort and permit of satisfactory respiration.

Secondary hemorrhage is liable to occur after the more extensive intra-nasal wounds, the greatest danger being within the first twenty-four hours. By the introduction of a Simpson-Bernays tampon, so it will cover the traumatic area, such complication may be averted. Before its introduction, the forward end and sides of the tampon should be smeared with vaseline, and after it is properly located by aid of sight, it may be quickly made to swell by the use of an aqueous spray. It should be removed the following day, and, if desired, can be gradually removed in sections, as its several layers can be withdrawn one after the other. Personally, I use the tampon only in special cases, wherein hemorrhage is particularly feared, and prefer generally to depend upon the hot carbolized douche, which tends to prevent bleeding.

After intra-nasal wounds involving the harder structures, as of the septum, smooth healing is materially advanced by the practice of daily massage of the wound until healed, at first gently, though later, as the soreness subsides, more force should be employed. Massage removes exuberant granulations and debris, and causes the wound to heal from the periphery toward the center, thus gradually reducing in size until healed.² Without the massage there may be reformation in soft tissue of a growth similar in form and size to the one removed. The omission of such after treatment explains the recurrence, after removal of septal ridges, as have been reported.¹⁵ My attention was first called to the value of massage by Rice,¹⁶ who advocated its use in the treatment of chronic septal ulcers, particularly in connection with atrophic rhinitis. As chronic ulcers of the septum can be best healed in this way, it seemed rational to employ massage in the treatment of intra-nasal surgical wounds.

The immediate result at the time of the operation will generally indicate what permanent result may be expected, though for several days thereafter, owing to marginal swelling, the appearance of the wound is unpromising. Occasionally, after a septal operation, there occurs a sufficient swelling of the base at the operated point, so a slight secondary operation is called for a few days thereafter, whereby such base may be more thoroughly removed. In the process of healing under massage, there are destroyed slight points of elevation, and at the same time by stimulation there is a filling up of slight depressions. Lastly, an eventual absorption of hyperplasia in adjacent prominences follows, though the maximum result may be delayed for a month or six weeks, after the healing of the wound. By this method, the resulting mucous membrane is smooth and firm, and appears in all ways like the normal.

The electro-cautery has been extensively used in the past in the treatment of nasal occlusion, and principally by cauterization of the anterior end of the inferior turbinal. While an improvement was for a time thus secured, it was soon followed by a recurrence of the old trouble. The explanation is that the turbinal congestion or intumescence was only a symptom, and the result of irritation from some other cause, generally some deformity of the septum, and often of apparently slight importance, though still sufficient to cause and keep up irritation of the opposing turbinal. When, in place of intumescence, there is genuine hypertrophy of the soft tissues of the turbinal, so it will not contract under cocaine, then a thorough cauterization is indicated, so as to remove excessive and obstructive tissue and destroy hypertrophied glands from which the secretion is excessive and abnormal.

Should the bony framework of the turbinal be involved, then a sufficient portion thereof should be surgically removed, in order to give free breathway and drainage.^{4 6 17 18} The reason why either the ridge upon the septum or the turbinal hypertrophy should be operated is chiefly the same; viz.: To improve the ventilation and drainage of the nose, and to do away with the intermitting touching of opposing surfaces, and a nice discrimination as to where the attack should be made, when both turbinal and septum are at fault, comes from increased experience. At times, turbinal intumescence, with tendency to hypertrophy, can best be overcome by the use for a few days of a nasal bougie.¹³

In conclusion, it may be added that the ultimate results following a course of intra-nasal surgical treatment are far better than are the immediate results. It must be remembered that for a time the new tissue formed as the result of an operation is delicate, and may, therefore, be compared with an infant's skin, but which, as time passes by, will become toughened and inured to climatic changes, so as not to suffer thereby, and thus a progressive improvement may be expected for a year, or even longer, after the treatment has been discontinued, though such improvement may be intermitting instead of constant, being influenced by climatic conditions and the exposures which the patient may from time to time sustain.

The improvement at first obtained is sometimes not fully appreciated by the patient, as it is only compared with the condition existing before the treatment was begun, though it may be said that at that time the patient was at a Y in the road, and drifting away from the proper course, while through the treatment the direction has been changed to the right course, so in future years the proper comparison to make will be the conditions as they are, not only with what they were, but with what they might have become.

CONCLUSIONS.

1. In the normal nose the nostrils should be of equal calibre and should jointly have a sufficient capacity to at all times supply the requirements of easy nasal respiration.

2. In the ideal nose the walls of the septum are practically plane, and are at no time or place touched by the tissues of the outer wall, in either passage, and, furthermore, no points of contact exist elsewhere therein, so as to interfere with either ventilation or drainage, or prevent the normal evaporation of nasal moisture.

3. While in an ideal nose the septum is vertical and nearly plane, a moderate irregularity thereof will not impair the nasal respiratory functions, providing there are no points of contact or abrupt elevations therein, and the lumen at all points is sufficient.

4. Abnormal redness of the nasal mucous membrane is an unfailing sign of irritation, the cause of which is generally of a structural nature, and, therefore, amenable to surgical treatment.

5. The indications for operative interference depend upon both the subjective and objective symptoms. A noticeable inadequacy of either nasal passage, the presence of excessive or retained secretions, or an abnormal redness of the mucous membrane at any point, are all evidences of abnormality, which, if coupled with inconvenience to the patient, invite corrective attention.

6. In the treatment of chronic hypertrophic nasal troubles, the indication is to remove all obstructive, redundant or pathologic tissues, and at all times the chief indication is to cause the defective nose to conform as nearly as practical to the contour and character of the ideal standard.

Columbus Memorial Building.

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DISCUSSION.

Dr. Barnhill, Indianapolis, Ind.:—Most of the principles laid down by the doctor I would be quite willing to accept. I rise to ask a question as to what method Dr. Pynchon has used in determining the distance of the middle turbinate from the septum. I do not believe that I have personally seen a case in which I could determine this accurately, and it has seemed to me that there must be at times a normal condition in which the septum does lie in slight contact with the middle turbinate. In the New York Rhinological Society there was a discussion as to this, and at that time some of the best men of this society believed that there was some normal contact between these two parts.

Dr. Pynchon (closing discussion):—In reply to Dr. Barnhill, I would say that of course it is very difficult to decide accurately about this matter of the middle turbinal, but I have frequently noticed in patients who come to me that there is a lack of proper space and when I have secured this by surgical means so I can pass a small cotton pledget through with ease from front to rear, it allays the symptoms complained of to a marked degree.

While I have talked about the perfect set of teeth and the emmetropic eye, I suppose they are not often found. It is the same with the nose. In hay fever there is a great weakness for the middle turbinal being too close to the septum.

THE PATHOLOGY OF ETHMOIDITIS RECONSIDERED.*

BY EDWARD WOAKES, M.D., LONDON.

Gentlemen: In response to your President's courteous invitation to send a short paper to this Congress, I propose to place before you very briefly some facts in connection with the pathology of ethmoiditis, and the views suggested to my mind by their contemplation. The characteristics to which I refer are manifest in all stages of the disease. They differ entirely from the phenomena observed when the same localities are attacked by simple inflammation, as in ordinary catarrh. So constant and destructive are these peculiarities that one is impressed with the fact that there is in this disease a specific character—not by any means necessarily of a syphilitic nature—but something *sui generis*, which differentiates it from all allied diseases, in so far that is, as the pathology of the latter is at present interpreted.

With your permission I propose to indicate the facts which seem to justify this conclusion, noting them in each stage of the disease, as they successively come under review. In the first stage the morbid changes are confined to the mucous membrane, usually that of the ethmoid region of the nose. There is an increase in the sub-mucous fibrous tissue and the whole is permeated by small celled infiltration. Very rarely at this stage, some myxomatous tissue will be in evidence, i. e., an area exists in which the fibres are much finer than in the adjacent new tissue. These constitute the stroma of the polyps, which contains a transparent mucoid fluid. It is just these rare forms of superficial polypus which are non-recurrent after removal.

From our present point of view a more important feature is the behavior of the newly formed fibrous tissue to the glands and blood sinuses embedded in it. Not only are they subject to compression as might reasonably be expected, but these organs are practically attacked and assimilated by the new fibrous growth. The process may occasionally be seen in progress under the microscope. It is after this wise. At a given point of contact between the gland or sinus and its new surroundings there is seen a stream of small cells which pass through a breach in the boundary wall of the structure attacked and

* Read at the Ninth Annual Meeting of the American Laryngological, Rhinological and Otolological Society, Lexington, Ky., April 30, 1903.

occupy any vacant space in it. These cells become fibrillated in continuity with the adjacent fibrous elements from which they appear to proceed. As the process advances the entire structure is involved—the gland or sinus disappears and is replaced by new fibrous tissue.

Here, then, we encounter the first display of the destructive and assimilative faculty with which the newly formed fibrosis is endowed, and which seems to me sufficiently unique to justify the term *specific* already suggested for it. Obviously it is unnecessary to consider the divergence which exists between the role of events just described, and that which characterizes an ordinary inflammatory catarrh.

Proceeding to the second stage, we are able to trace the attack of the newly developed fibrous elements on still other specialized organizations. The small arteries of the submucous stratum are invaded, their coats thickened so that their lumen becomes occluded. Coincidentally, it is observed that myxoma develops from within, intruding itself between the trabeculae of the spongy bone, causing considerable expansion of the mass. At the same time the bone itself undergoes intrinsic absorption, becoming thinner—a process which appears to be independent of the advancing fibrosis. The way in which the latter actually attacks the bone is peculiarly interesting, and introduces us to the appearances known as *Howship's Lacunae*. A little depression or bay is observed on the surface of a trabeculum which is occupied by cells of varying sizes, the largest situated nearest the bone being called osteoclasts, with the fibrous tissue following behind in close contiguity—recalling in fact the features described when a blood sinus or gland is the subject of attack. As the bay gets deeper the fibres advance with it, and when at length the trabeculum is quite perforated, these fibres are on the spot and unite with those on the opposite side. So that the interval between the now severed bone is occupied by fibrous tissue. As the latter can afford no nutriment to the isolated osseous fragment, it is obviously in a fair way to become necrosed.

The third stage is occasionally characterized by the formation of cysts or cavities within the spongy process. These have an interest of their own, but no special bearing on the point I am desirous of emphasizing.

The fourth stage shows the changes already observed in their final developments. The destruction of the bone in the implicated portions, is now complete. Sharp rugged spicules project from the eroded surface, the substance of which consists of earthy matter

only. So completely has the invading fibrosis accomplished its disintegrating work.

It is specially important to note that when the consummation above described is complete, indeed usually long before this stage is reached, the fibrosis itself tends to atrophy. Often in fact, growth and wasting characterize the development of fibrosis in all its stages. It has often occurred to me to question whether myxoma is not itself a phase in the degeneration of this new tissue. As already remarked, it may be met with in any stage of the disease, though not frequently during the first of these. Whether it will assume the form of a more or less pedemculated polypus is really a question of time and space, more especially the latter.

The readiness with which the normal structures yield to the advancing fibrosis varies in different individuals. While it is rapidly progressive in some—the ethmoid cells, the maxillary antrum, the sphenoidal and frontal sinuses, becoming the arena of a similar pathological conflict—in not a few there is a partial arrest of its progress, which stops short—as regards the spongy bone—at the stage of intrinsic absorption. The turbinal process is now represented by a thin plate of bone covered by an attenuated mucous membrane having a glazed and somewhat sticky appearance. Even in such cases it is usual to find isolated areas of necrosis either in the inner wall of the ethmoid, or its cells. This condition with others cognate to it is extremely persistent, accompanying its possessor, not without much inconvenience, through the greater part of a long life. At this point the question naturally occurs—what is it that gives to the newly formed fibrous tissue the aggressive and assimilative capacities exhibited in the phenomena just briefly sketched? The answer to this query implies that of a much larger one, viz.: What is fibrosis? While confessing myself quite unable to solve either of these problems, I anticipate much illumination regarding them should you deem them worthy of discussion to-day.

Something might be gained in this connection if it could be ascertained whether any analogous process occurs in other anatomical organs of the body. Whenever this question occurs to me there arises a mental vision of certain forms of kidney disease. I refer to the so-called large white kidney with its associated cysts, recalling the polyp stage of ethmoiditis; and later on the small contracted kidney paralleling the atrophic stage of nasal fibrosis. The way in which the typical histological elements of the kidney break down and disappear, their place being occupied by the growing fibrous elements of the organ may perhaps be regarded as a case in point.

I am aware, however, it is customary to describe the order of events as observed in renal disease in a manner the reverse of that which is seen to be the sequence in ethmoidal disease. It is possible that post-mortem changes may account for this divergence of view. For while the specimens of nasal fibrosis which exhibited the phenomena above detailed were procured from the living subject, the pathological changes in kidney disease can only be estimated by examinations conducted usually many hours after death. A trite illustration of the changes due to post-mortem influences is afforded in the case of a larynx which shortly before death has afforded visual evidence of acute inflammation, and yet post-mortem will present a perfectly normal appearance. But to return to our subject. Other examples having such a seeming relationship, will doubtless occur to you, such as disseminated sclerosis of the nerve centres, which *mutatis mutandis*, may perhaps be regarded as possessing analogous, or quasi analogous relations with the nasal form of the disease.

Here another problem obtrudes itself, which may be formulated thus—Are the various manifestations of fibrosis in whatever organ they may be located, all alike due to the pre-existence of a constitutional diathesis—a fibrous or sclerotic diathesis—inherited or acquired, and dormant in the system till such time as the vital energies of the part can no longer repress its local development? Obviously these interrogatories possess an interest far beyond the scope of rhinology, yet it is in this department of medicine that their solution will most probably be found—for it is in it that the phenomena of fibrosis can be most profitably studied. Not only can it be visually inspected in all stages of its development, but specimens may be safely removed for the purpose of pathological research, thus avoiding the necessity of postponing such examination till the changed conditions implied in necroscopic investigation have taken place.

In conclusion, Gentlemen, I would bespeak your forbearance for what I fear is but a crude rendering of the facts and suggestions comprised in the foregoing remarks.

THE USE AND ABUSE OF THE EUSTACHIAN BOUGIE.*

BY M. A. GOLDSTEIN, M.D., ST. LOUIS.

It is interesting to observe that the Eustachian bougie, often looked upon as one of the modern and progressive technical procedures in the treatment of chronic non-suppurative affections of the ear, on closer investigation proves to be a favorite and frequent method employed by pioneer otologists. The first suggestions for the use of the Eustachian bougie were made by Saissy as early as 1860, endorsed a few years later by Bonnafont, and especially recommended by Kramer for diagnostic and therapeutic service in the early '60s.

A classic description of the technique and value of the Eustachian bougie is found in Kramer's "Handbuch der Ohrenheilkunde," 1867, and in the minutia of description and indications of its use, this chapter would do credit to any modern presentation of the subject.

Of the modern and most persistent and consistent advocates of the Eustachian bougie, Urbantschitsch deserves first mention, and it is especially to his enthusiastic support and liberal employment that this technique owes its present popularity.

It is interesting to trace the evolution of the bougie from its earliest advocate, Saissy, and the catgut bougie to the gold electrolytic bougie as used by Duel, Phillips, Pierce and others.

Bonnafont in about 1865, substituted rubber (caoutchouc) for catgut, claiming greater durability, mobility, shapeliness and cleanliness. As used by Bonnafont, the bougie was introduced and guided through the Eustachian canal by the tactile sense alone; there were no markings on the distal end of the bougie to indicate to what extent it had entered the tubal canal, and the calibre of the bougie as then constructed was too large to admit of its passage through a moderately constricted Eustachian tube.

Kramer as early as 1865 had bougies constructed in an increasing scale of twelve (12) sizes, of black, lacquered rubber and conical tips. Bougies of this construction found favor until those of celluloid and polished whalebone recently came into use.

In this summary, mention should also be made of the Eustachian bougie of *Laminaria digitata* which also had its period of popularity with the earlier otologists; but the risk of breaking this bougie

in situ and the possibility of the laminaria swelling to such a diameter that it could not be easily extracted from the Eustachian tube, soon brought this form of bougie into disrepute.

It is the bougie of to-day, of celluloid, of whalebone, and the electrolytic bougie of gold, that we wish to consider.

Diagnostic Value. The bougie should be valued as much for its aid in the diagnosis of chronic catarrhal affections of the ear, as for its efficiency as a therapeutic agent in relieving these conditions. There are so few means at our disposal for accurately determining the extent and character of chronic hypertrophic otitis media, that so effective an agent as the Eustachian bougie should always be given due consideration. It is often impossible merely from the picture of the membrana tympani presented on ocular inspection and from the conclusions of our several tuning fork tests and the history of the case, to accurately determine to what an extent a catarrhal process in the middle ear has progressed. Clinically, we frequently see an aggravated form of chronic hypertrophic otitis media where the membrana tympani presents an almost normal picture, and where the use of the catheter, inflation bag and auscultation tube indicate the patency of the Eustachian tube. On the other hand it is also often observed in a similar class of cases where the hearing is but slightly impaired, and the membrana tympani cloudy and retracted, that the lumen of the tubal canal is greatly diminished. It is in the differentiation of these variations in the symptom-complex of chronic hypertrophic otitis media, and in some instances also of acute tubal and tympanic affections, that the Eustachian bougie becomes an invaluable agent in localizing and determining the extent of the lesion.

Clinical experience proves that it is equally as important to study every minutia of the Eustachian tube in its bearing on a given case of hypertrophic otitis media, as it is to gather data from the appearance of the membrana tympani, the results of the tuning forks, and the subjective symptoms presented by the patient. With the bougie we are enabled to outline the entire tract of the tubal canal, and by educating our tactile sense, we may determine the exact location of any narrowing or constriction of the tube and may even ascertain the character and consistency of the tubal mucosa.

I believe the use of the Eustachian bougie is of so great a diagnostic importance, that it should be as regularly employed in every case of otitis media chronica, as is the ocular inspection of the membrana tympani and the technique of middle ear inflation to determine the patency of the Eustachian tube; and I further think that continued

experience in the use of the bougie will determine for us many points of diagnostic value which cannot be obtained by any other means.

I have used the Eustachian bougie liberally and constantly during the past ten years, and it has been my experience that the technique, if gently and carefully performed, is not more objectionable to the average patient than the use of the catheter and tympanic inflation.

It may be superfluous at this stage in the evolution of the Eustachian bougie, and especially before this august assembly of fellows, to describe the technique of the bougie, but for completeness' sake, permit me to do so.

Technique. As a preliminary to insure easier manipulation of the catheter and add to the comfort of the patient, I anaesthetize the inferior nasal meatus lightly from the vestibule to the pharyngeal orifice of the Eustachian tube with a swab of 4 per cent. cocaine. Besides allaying the irritability in passing the catheter, this also serves to temporarily reduce turgesence and increase the calibre and working area in the naris. I use a slender, sterling silver catheter 12 cm. in length, the tip of the beak carefully polished both in-and-outside so that there may be no hindrance to the easy protrusion of the bougie. I prefer the short catheter, as it is less awkward to handle and can be better held in position. Of the various kinds of bougies, I prefer the black polished whalebone. The celluloid bougie advocated by Urbantschitsch has an objectionable feature, in that the material becomes brittle with age, and offers a possibility of the breaking of the bougie in situ. Several cases of this character have already been reported. The whalebone bougie, as recently furnished by Meyrowitz, Ermold, and Chambers-Inskeep & Co., is well molded, highly finished, of great elasticity and of unusual durability. These bougies are olive-tipped and of five sizes. The olive end of the bougie has a larger diameter than the shaft, so that if the tip of the bougie passes a constricted point in the canal, the body of the bougie offers no further resistance. If these olive-tipped shafts are carefully calibred, it affords us an additional means of determining with some degree of accuracy, the diameter of the most constricted portion of the Eustachian tube. The bougies, measured by their bulbous tips, are as follows: No. 1, $1/3$ m. m.; No. 2, $2/3$ m. m.; No. 3, $3/3$ m. m.; No. 4, $4/3$ m. m.; No. 5, $5/3$ m. m. As the normal average diameter of the most constricted part of the tubal canal, viz., the Isthmus tubæ, is about $1\frac{1}{3}$ m. m., it is not necessary to use bougies of larger calibre.

Before proceeding to the introduction of the bougie, each bougie is carefully marked along the shaft with white ink as follows: The

bougie is pushed through the Eustachian catheter until the olive tip is flush with the distal (beak) end of the catheter. A mark is then made on the shaft of the bougie at the proximal (funnel) end of the catheter. A centimeter scale is then used to complete the markings. The average length of the Eustachian tube from the pharyngeal orifice to the tympanic end is about 4 m.m. This length is now marked off on the shaft of the bougie. The distance from the pharyngeal orifice to the isthmus tubæ varies from 2 1/2 to 3 m.m. This is the third mark made on the shaft of the bougie. With these markings then, we are enabled to determine when the bougie is in position, whether it has emerged from the distal end of the catheter, when it has reached the Isthmus tubæ, and when it has entered the tympanic cavity.

The catheter is now introduced in the usual way, and by inflation and auscultation we determine whether the catheter is in position in the mouth of the Eustachian tube. The bougie is then passed through the catheter and pushed forward gently and carefully, the operator watching the markings on the shaft to determine the several points reached by the bougie. An educated tactile sense is often the best guide. As the bougie leaves the tip of the catheter and enters the tubal canal, an appreciable resistance will be felt; this resistance is greatest as the bougie reaches the Isthmus tubæ, and if passed beyond this point there is a sudden definite and noticeable yielding to the touch of the operator. To the practiced operator the passing of the bougie is as easy a technique as the introduction of the Eustachian catheter. There is one precaution which should always be regarded, namely, *never use force*. Nearly all of the failures in the use of the bougie and the several complications arising therefrom may be ascribed to rough or forcible manipulation.

It may be of interest to enumerate the several objective and subjective signs to indicate that the bougie is in position.

Objective Signs. 1st. When the catheter ring at the funnel end is moved perceptibly upwards or downwards during the introduction of the bougie, it is an evidence that the bougie is passing in a wrong direction. 2nd. When the bougie has passed readily into the Eustachian tube, the catheter will be held by it in proper position without the assistance of hand or clamp. 3rd. If the bougie is not properly in position, deglutition or swallowing movements will cause it to shift. 4th. If, on withdrawal, a decided kink or bend is noted at the distal end of the bougie, it indicates that the bougie has been forced between the tip of the catheter and the pharyngeal wall, and has not entered the tubal canal.

Subjective Signs. 1st. If the patient complains during the introduction of the bougie, of a scratching or a sticking in the pharynx, locating the sensation deeper as the bougie is pushed forward, it is evident that the bougie is not entering the tubal canal. 2nd. As the bougie passes the Isthmus tubæ, patient will frequently describe a feeling of sudden tension in the ear; occasionally this is accompanied by a slight sticking pain. 3rd. A frequent accompaniment of the passage of the bougie into the canal is a crackling sound, as heard by the patient, and occasionally through the auscultation tube by the operator as well—a sound like that heard on swallowing, and probably produced by the rubbing of the tip of the bougie on the walls of the Eustachian tube.

Precautions in the use of the bougie. Again, the keynote to the situation is—*never use force.* Anatomically, the mucosa of the Eustachian tube contains occasional rugæ, folds or pockets, and it is not uncommon for the tip of the bougie to be engaged in one of these folds. If, when this takes place, the operator is under the impression that he has encountered a constriction in the tubal tract and forces the tip of the bougie forward, it is easily possible to produce a false passage. Again, if there is considerable constriction in the tube and the operator insists on forcing the bougie through such constriction, there is every likelihood that the delicate mucosa of the tube may be bruised. Whenever such a break in the continuity of the mucous surface lining of the Eustachian tube occurs, and air inflation follows the withdrawal of the bougie, there is danger of producing a local emphysema, one of the most disagreeable and possibly serious complications in this technique. A safe precaution which should be universally adopted, is to inspect the tip of the bougie when it is withdrawn, and if the slightest stain of blood is found, *do not inflate.*

Generally, the value of the use of the bougie is increased by careful inflation of the tympanic cavity immediately after withdrawal of the bougie. If, however, it is found that inflation increases the subjective symptoms in a given patient, it should not be carried out.

Bougies should be sterilized in a 3 per cent. lysol solution, and the same preliminary precautions that are ordinarily used in catheterization should also be carried out in this technique.

Therapeutic Value. From my own experience and observations I would conclude that the Eustachian bougie is of inestimable value in the treatment of all chronic affections of the middle ear, not only where there is a decided stricture of the Eustachian tube, but also where the lumen of the tubal canal indicates a diameter diminished

to less than 1 $\frac{1}{3}$ m. m., as can be easily measured by properly graduated bougies.

The bougie in this class of cases should be used systematically and regularly. A bougie of properly selected diameter should be passed the full length of the Eustachian tube, and left in position for a time varying from one to ten minutes. If the patient complains of continued pain while the bougie is in position, it should be immediately withdrawn. The first application of the bougie is usually the most uncomfortable to the patient. When the bougie is withdrawn, and if there are no contra-indications, thorough inflation of the tympanic cavity should follow.

Repeat the introduction of the bougie every second or third day unless unfavorable reaction is noticed. As soon as the patient can tolerate it, and when the technique can be carried out without force, the next larger size bougie may be used. Proceeding from size to size, as the indications of the individual case will permit, the tubal canal is thus subjected to a gradual dilatation, until the patient can tolerate bougie No. 5, which is $\frac{1}{3}$ m. m. larger in diameter than the lumen of the average normal Eustachian tube.

Contra-indications. Of the contra-indications for the continued use of the bougie, perhaps the most frequent are, a feeling of fullness and dullness in the ear, and an increase in the subjective symptoms. When the patient repeatedly complains of these conditions, the use of the bougie should be discontinued. The period of treatment for gradual dilatation of the tubal canal is from three to six weeks. In my own experience, if improvement does not follow three or four weeks' use of the bougie, I discontinue this form of treatment. Marked improvement is sometimes noticed after the first or second passage of the bougie.

I wish to emphasize that the bougie has often proven an efficient agent when pneumomassage, catheterization andflation of the tympanic cavity have failed to produce satisfactory results.

Of course, the main element of value in the use of the bougie is a mechanical one, and the improvement noted after its application is from a clearing and dilatation of the Eustachian tube. Of the other factors which have been occasionally cited as of value in this technique, is the massage of the mucosa and musculature of the Eustachian tube, and its stimulating effect both on the circulation and on the peripheral nerve endings, in loco and reflex.

I have often found the bougie of value in occasional cases of chronic suppurative otitis media, where there was a narrowing of the tubal lumen. It is likely that the increase of the lumen of the

tube thus effected offered a better ventilation to the tympanic cavity, and helped to materially curtail this suppurative process there.

If the Eustachian tube, physiologically considered, functionates as the natural ventilator of the tympanic cavity and also acts as a drain canal for the secretions of the tympanum, it is reasonable to suppose that the clearing of this tract by the use of the bougie may also be of service in some of the sub-acute catarrhal affections where stringy, mucous secretions are found in the Eustachian tube. It is not an uncommon experience to find a plug of mucous or ropy secretion in the Eustachian tube, which materially retards improvement in a given case, and where repeated applications of the Politzer bag or other form of middle ear inflation failed to dislodge same.

I have used the bougie successfully in many such instances; either the mucous is pushed into the tympanic cavity and is there absorbed, or it follows by suction the end of the bougie as it is withdrawn from the end of the tube.

In conclusion, I wish to add a word concerning the most recent evolution of the Eustachian bougie, and that is the gold electrolytic bougie. There are two advantages credited to the electric bougie. First, that it adds to the mechanical value of the bougie, the additional effect of galvanic electricity. Second, electrolysis makes it possible for the metallic, gold bougie to pass tight strictures in the Eustachian canal which cannot be accomplished by the whalebone or celluloid bougie.

I believe the addition of the mild galvanic current with its stimulating effect on the mucous membrane, nerves and muscles of the Eustachian tube, enhances the value of the bougie; but as to its mechanical and electrolytic results, I am not so sanguine.

I have used the gold bougie with three to four milli-amperes of galvanic current, in about fifty cases, and I am free to confess that with few exceptions I have obtained no results greater than those to be derived from an intelligent use of the whalebone bougie.

It is true, the electrolytic bougie will melt through tight strictures, but I have invariably found a reaction following the use of electrolysis, and if not very carefully watched, the stricture in healing, becomes tighter than before. This method has been termed "electrolysis"—I take exception to the nomenclature, and would suggest that it might be more properly termed a mild surface cauterization of the mucosa of the Eustachian tube. In every other form of electrolysis applied to the mucosa, the negative, uni-polar, and in some instances, even the bi-polar needles penetrate the mucous membrane and the electrolytic action takes place submucously

When the electric bougie is used with sufficient current to pass a tight stricture, it produces an erosion of the mucous surface, this erosion is distributed not only over the entire lumen at the point of the stricture, but to the whole length of the Eustachian tube with which the metallic bougie comes in contact.

If this amount of surface erosion takes place, it is certain that reaction will follow; and unless the tubal canal is kept constantly dilated by a plain bougie, a further narrowing of the tubal lumen cannot be prevented.

If the electric bougie can be used with a current sufficiently mild to produce simple galvanic stimulation of the parts without even the slightest destruction or erosion of the surface, I believe the technique is a justifiable one. If, however, an electrolytic or other cauterizing influence is brought to bear on the tubal mucosa, I think the procedure one which should be very cautiously engaged in, and one which is frequently clinically unsatisfactory, both to the patient and to the operator.

THE POSSIBILITIES AND LIMITATIONS OF THE ELECTROLYTIC BOUGIE IN THE TREATMENT OF CHRONIC CATARRHAL OTITIS.*

BY ARTHUR B. DUEL, M.D.

Aural Surgeon to the Manhattan Eye and Ear Hospital; Consulting Aural Surgeon to the New York Health Board; Willard Parker, Reception and Riverside Hospitals.

Four years ago at the annual meeting of this Society, in Cincinnati, I had the pleasure of reading a paper entitled: "The value of Electrolytic Dilatation of the Eustachian Tube in Chronic Tubal Catarrh and Chronic Catarrhal Otitis Media."† This embodied a tabulated report of some fifty cases which had been under my treatment for from one month to two and a half years. This had been preceded by a preliminary note in the *New York Medical Journal*, January 16th, 1897, and a report of ten cases in the *New York Eye and Ear Infirmary*. Reports January, 1897. The work was begun by me without the knowledge of its use by others for the same purpose, and the technique which I advised differed so greatly, and results were so much more gratifying, that the method has been attributed to me since then by men who have written on the subject. Many otologists have taken up the work in all parts of the country, and, as a result, a number of articles pro and con have appeared. It is with the idea of analyzing the situation—trying to point out why such a diversity of opinion exists regarding the value of the procedure that I appear before you again to-day. To get at the actual facts. I directed the following letter to every member of this Society, and a number of others so that in all about 240 letters were sent out:

"Dear Doctor:—I propose to read a paper before the A. L. R. O. Society April 30th, entitled: "The Possibilities and Limitations of the Electrolytic Bougie in the Treatment of Chronic Catarrhal Otitis."

I am anxious to get a brief expression from all who have made use of the electrolytic bougie, and will ask you to kindly answer the questions attached below. In order that the answers may be available for my paper, I earnestly request an early reply. Thanking you in advance for the courtesy, I am,

Very truly yours,
ARTHUR B. DUEL."

* Read before the American Laryngological, Rhinological and Otological Society, at the ninth annual meeting in Lexington, Ky., April 29, May 1 and 2, 1903.

† Vide THE LARYNGOSCOPE, Feb. 1893, p. 116.

"1. Have you made use of the electrolytic bougie?

"2. In how many cases? Note. (If statistics are not easily available, kindly say "a few" "a moderate number" or "a large number.")

"3. Regardless of improvement of hearing, etc., have you found that a narrow tube could be more quickly opened by this method than by other methods?

"4. Have the tubes remained open longer?

"5. Has improvement taken place in a majority of selected cases, either in hearing, tinnitus, vertigo, or all?

"6. Have you had any accidents?

"7. On the whole do you consider it a valuable addition to the otologists' armamentarium?

"8. Remarks."

Replies were received from one hundred and thirty-five. Of this number fifty-eight had employed it; seventy-seven had never employed it. Of the fifty-eight who had employed it twenty had done so in a large number of cases; twenty-one in a moderate number; and seventeen in a few cases. Thirty-six considered it a valuable addition; eleven were doubtful about its value until further experience had been gained; nine had abandoned it as useless.

Of the twenty who had used it in a large number of cases, two considered it of no value. Seventeen had found that the tubes could be more quickly opened; one had not. Eleven thought the tubes remained open longer; five thought not; two were in doubt.

Of the twenty-one who had used it in a moderate number of cases, thirteen had found that it opened the tubes more quickly and that they remained so longer in some, or all cases; five had not thought so; three were in doubt; three considered it of no value.

Of the seventeen who had used it in a few cases, four considered it of no value; nine thought it had opened the tubes more quickly. The accidents reported were:

1. Fainting of patients, two cases.
2. Emphysema, six cases.
3. Acute otitis, twelve cases.
4. Acute otitis and mastoiditis, one case.
5. Temporary injury of the chorda tympani nerve, three cases.
6. Breaking of bougies in tube, nine cases.

What conclusions can be drawn from such statistics? Certainly that the electrolytic bougie is not an unheard of thing as it was a few years ago. Certainly also that a large number of men who have followed out the ideas laid down in that paper have found a valuable

addition to their armamentarium. Certainly also that many men have utterly failed with a procedure which some have found invaluable in their work.

How are we to account for this? My own experience leads me to the conclusion that failures have been reported either because the method had been used in unsuitable cases, or because it has been improperly applied. What do I mean by a suitable case? I mean the patient who comes to you complaining of deafness, tinnitus of varying character, perhaps occasional dizziness. This began a year ago, or twenty years ago, in one ear probably, and then attacked the other; or, it may have attacked both at the same time. Usually there is a marked difference in the two. He can hear *tete-a-tete* conversation, when he is paying close attention, fairly well, but when two or three are talking he is quite lost. At table he has great difficulty partly owing to the fact that many are talking, and partly to the fact that the noise made by the food while he is chewing drowns other sounds. He gets on fairly well in noisy places. He did not think much about the deafness on one side until the other began to be involved, but suddenly one day he realized that the ear he used to depend upon had become his "bad one."

On functional examination you find that his lower tone limit has gone up from the normal, 16 V. S. to any where from 60 V. S. to 256 V. S., and there is from one to three octaves difference in the two ears. A 256 V. S. tuning fork in vibration placed upon the forehead is distinctly referred to the bad ear. Bone conduction, as compared with your own, is greatly increased. He hears the fork by bone conduction long after it has ceased by air conduction. Inspection shows a slightly opaque and considerably retracted tympanic membrane which moves freely when Siegel's Oscope is used. He hears the acoumeter from one to eight feet, and the forced whisper twice as far. On inflation, by catheter accurately adjusted, the auscultation tube reveals the fact that the air which enters is much less than a normal tube would admit. Nevertheless immediate test shows that with the aid of what you have forced in he hears the acoumeter and whisper two or three times as far as before inflation. This improvement is only temporary, lasting from a few minutes to a few hours.

Such a case can be promised a brilliant, and comparatively permanent improvement from the electrolytic bougie, properly applied, providing that it has been followed up or preceded by such other treatment of the nose, naso-pharynx, and middle ear as may be required. The improvement will be far more brilliant and perma-

nent than it could possibly be without the bougie. However, the otologist who wonders why he has not cured his case by simply passing the bougie, fails to realize that this is only one step in the treatment of such cases, and that the restoration of the ventilation of the middle ear cannot remain permanent unless the original cause is removed.

Such a case which has never been under treatment is certain to have some obstruction to his nose or naso-pharynx from a deflected septum; or a septal ecchondrosis, or exostosis; or nasal polpi; or enlarged turbinals, from chronic hypertrophic rhinitis; an hypertrophied pharyngeal tonsil or its remains; or hypertrophied faucial tonsils; etc.

Should he have been under treatment by competent men these obstructions will probably have been removed. Then the opening of the Eustachian tube by the electrolytic bougie is almost certain to prove the keynote to the situation and to give great relief.

Should such obstruction be present it would be utter folly to open the Eustachian tube and expect any permanent results. It is my firm belief that reports of series of cases which have had no permanent results from this method, have been from this very lack of care in looking after the primary cause of the trouble. I seriously doubt if any one man can do all that is necessary to a large number of cases at one time, without devoting his entire attention to them. Therefore, one judgment of the value of the procedure may be greatly warped in the wrong direction by carefully tabulated reports of an apparently stupendous work of a man who has, for the very nature of the case been unable to give each patient as much attention as he required.

While I consider the electrolytic bougie a "sine qua non" in the treatment of Chronic Catarrhal Otitis, I am sure that it alone would be as incompetent to obtain results as a riderless horse in a steeplechase. Those who expect to report successes must combine with ability to use the method skillfully, a wise knowledge of the proper case on which to use it, and a nice judgment regarding the treatment of conditions other than the narrow Eustachian tubes.

I have thus far spoken only of an ideal case for the electrolytic bougie. As you all know many cases have gone on from the hypertrophic stage, in which the tubes are occluded, to the atrophic stage, in which the Eustachian tube has already become patent; the mischief has already been done in the middle ear, and often the labyrinth has become involved.

It is rather useless to expect results in a case where the Eustachian tubes are wide open. Where there is a marked diminution of bone conduction one should be very wary about promising relief from deafness even though there is evidence of very narrow tubes. One is justified, however, in opening them under such conditions providing tinnitus or vertigo is present. The vertigo is frequently entirely relieved—and the tinnitus may be improved. In many cases I have found that the low pitched sounds described as "rushing," "roaring," "beating," "pounding," etc., the sounds which are likely to result from middle ear obstruction were stopped, leaving only a high pitched ringing which was probably labyrinthine in origin. Occasionally a case is met with in which a complete stenosis is present—i. e., so complete that no evident air enters the tympanum on forcible catheter inflation, and no temporary improvement takes place. The opening of such a tube, providing the labyrinth is not involved, is likely to give a most brilliant improvement in hearing, and great relief to other distressing symptoms. A few such cases are reported.

The idea should be kept in mind that the electrolytic bougie has one definite possibility—that of opening a closed, or increasing the calibre of a narrowed Eustachian tube. Experience has shown that it will do this more quickly and permanently than any other method, when it is indicated.

Regarding the accidents reported I shall take them up briefly.

The fainting of two patients can hardly be reckoned as serious, considering the fact that fainting is not uncommon as a result of very trivial operations; in some cases even Politzerization has caused it.

Emphysema, of which six cases is reported, should never occur, inasmuch as inflation should never be practiced after bougieing by this or any other method, for twenty-four hours, and, in case there is any fear of tranmatism, for a much longer period.

The occurrence of acute otitis (twelve cases) and mastoiditis (one case) have been rather infrequent, considering the number of cases operated, and the number of operators. They only serve to make us exceedingly cautious in our efforts to have our instruments and the field of operation as clean as possible in order that infection may be avoided and to use extreme care that a low current strength is used for a short time only to avoid too great a reaction.

The injury of the chorda tympani nerve occurred in three cases in my own practice. I have heard of no others. The nerves were evidently injured by contact with the electrode. Dryness of one

side of the mouth and partial loss of sense of taste supervened and was very slow in disappearing. I rather expected to hear of the same accident from others but the fact that I did not shows that it is very unlikely to occur.

Breaking of the bougies in the tubes, I regard as a most serious accident. Nine cases are reported.

At the very beginning of my work when the bougies were made by brazing an olive shaped copper tip onto a steel wire, the breaking of a wire which had corroded—led me to have the bougies made of gold to avoid corrosion, and the possibility of such an accident occurring again. One gold bougie, since then, broke at the tip of the catheter as it was withdrawn and was hawked out from the naso-pharynx and handed to me by the patient. I have had no other similar accidents, but have discarded many bougies because they had been slightly bent and I feared that they might break. The fact that so many men, who have undoubtedly used the utmost care and gentleness in the use of the bougie, have reported this accident, has led me to take every possible precaution to find out why it happened. I am unable to satisfy myself that any change from the passage of the electricity through the gold could have altered it so that it would break, with the small amount of force which ought to be used. Were the wire used as a positive pole, where we know the metal gradually undergoes a chemical change in the presence of the secretions, one might conceive that such an alteration had taken place (even this I have not been able to produce sufficiently to make the bougie break without great force), but, with the negative current passing through it, I can see no reason for any change at all. I can only account for the accident by supposing that frequent bending has rendered the solder at the point of brazing very brittle and that a very slight pull might then be sufficient to separate the wire at that point.

The wires ought to be made with great skill, and should be inspected very carefully each time before using. Any which may have been bent should be discarded.

Briefly, I wish to reply to certain criticisms, which have appeared in articles on the subject and to some remarks made in the answers received in the circular letters.

An article has been written decrying the use of the Electrolytic Bougie on account of the danger—because the tube has rugæ; because it has ciliated epithelium, etc. Gentlemen, the Eustachian tube which requires bougieing is no longer a normal one, performing its function of ventilating the tympanum, but is,

instead, a wholly or partially useless tube, rendered so by alteration of its lining by an hypertrophic catarrhal process, as you know. What are you going to do? "Sit on the bank and watch the river flow by," content with the fact that you have taken no chance that you might rub off a ciliated epithelial cell which is really no longer performing its function, or get stuck in a fold which was no longer doing what nature intended it to do?

The patient who has Eustachian stenosis, is, so far as his ears are concerned, in the position of the boy who finds that the vent hole in his drum has been plugged up—the drum heads won't vibrate—neither will your patients membrana tympani. Now, if the boy can't get the plug out of the vent hole in the side of the drum he will have a better acting drum, although a worse looking one, if he takes a hammer and nail and makes any kind of a hole in it. So will your patient hear better if you get any kind of a hole into his tympanum again, regardless of whether the tube is lined with ciliated epithelium, or has the original number of rugæ or not. As a matter of fact, without too much theoretical consideration in the face of a large clinical experience, the bougie usually goes in without engaging in a pocket, and one finds that the tube admits more air on inflation a few days later.

It has been doubted that the electricity had anything to do with the result. One might as well try to convince me that the wind never blows. It is a well known fact that the negative pole of the galvanic current applied directly to tissue of the kind which causes the obstruction in Eustachian tubes in Chronic Hypertrophic Catarrhal Otitis Media, exerts a powerful so-called "resorptive" influence on it. One has only to apply it properly and watch the result to be convinced that this is true. This "resorptive action" I believe takes place by electrolytic action on the hyperplastic subendothelial cells, which are less highly organized, without breaking up the more highly organized endothelium at all, so that the lumen of the tube is enlarged without any destruction of the lining membrane.

The effect is analogous to the effect of the current on recent swellings and rapidly growing new formations, which often rapidly disappear under the influence of the negative pole when applied through the skin. There is no evident effect on the highly organized cells composing the skin—yet the less highly organized cells of the new formation disappear by this "resorptive" influence resulting from electrolysis.

Errors in technique have varied from the ridiculous to the pathetic. One man who "left his patient with the bougie in posi-

tion in the tube, to go to the telephone was chagrined on his return to find that his patient had removed a portion of the bougie leaving the rest of it somewhere in the tube. He had not used the method since then, and considered it a useless procedure.

Another had made use of it in some cases, "as a routine practice, every other day for a considerable period, without any benefit." He had abandoned it as useless. He should never have begun to use it.

The cases in which I have found it of greatest value have been those in which I have used it only a few times—and at considerable intervals. All those who have reported brilliant success with the method have pursued the same course.

Another man wished to know why it was insisted that the negative pole should always be used. It goes without saying that one who has taken the trouble to inform himself so little about the action of the different poles of the galvanic current is not in position to make use of it in as delicate work as bougieing the Eustachian tube; much less to report on its value.

The most frequent criticism has been that hard rubber catheters, which afford perfect insulation, have not been used rather than the silver catheters, insulated by rubber tissue wound on each time. There are three sufficient reasons to my mind: First. A rubber catheter with sufficiently large calibre to admit the bougies is much larger than a silver one insulated by the rubber wound on spirally. Second. The sterilization of the rubber catheters in antiseptic solutions is never as reliable as boiling, which can be done only to the silver ones. Third. The rubber catheters can not be readily bent and accurately adjusted to each case (an important point) as are the silver ones, and they are not quite stiff enough at the curve to maintain an accurate end on push to the bougie, which is very important in preventing the wire from bending.

In a few words I wish to repeat what I have said about the technique in previous articles.

The electricity may be obtained from the street current, properly controlled, or from a battery of twenty to forty cells. If the street current is used it should be cut down by a control plug before entering the converting apparatus to a strength which is not dangerous. The apparatus should have a perfect volt-meter, rheostat, pole changer, and mille-ampere-metre. If a cell battery is used there is no necessity of a volt-meter as the voltage may be determined by the number of cells used. From twenty to forty volts should be used according to the resistance offered by the patient.

The positive pole should be held in the patients' hand (all rings should be removed), or fastened to the wrist by a clamp. The negative pole should be invariably used in the Eustachian tube. The slender wire, running from the battery to the bougie should be fastened by means of a delicate connecting handle.

The current should invariably be tried by short circuiting the poles to see that it is working quite smoothly, otherwise the patient may be slightly shocked by interruption of the current.

The patient should be prepared by careful cleansing of the nose and naso-pharynx by Dobells solution, and by cocainization of the inferior meatus, and mouth of the Eustachian tube, by passing a piece of cotton saturated with a 10 per cent solution along the course of the beak of the catheter. The small silver catheter and the bougie should be sterilized by boiling. A catheter with large enough calibre to allow the bougie to pass through it should be used and adjusted accurately to fit each case, it being determined by auscultation that it is in place. The catheter should then be removed and insulated by rubber tissue wound on spirally and smoothly from the tip toward the ring, the whole catheter being covered. The insulated catheter should now be passed and proved to be accurately adjusted by inflation and auscultation. The bougie should then be slipped through the catheter into the tube, and then pushed along with very gentle pressure until some obstruction is met with. The patient should now be warned that the current is to be gently turned on and that a slightly warm sensation will be felt. From half to one and one-half mille-amperes should be turned on according to the sensation of the patient, in the meanwhile the same gentle pressure being kept up.

Usually within half a minute a bubbling sound caused by the electrolytic action will be heard in the auscultation tube. The patient will hear it also and usually speaks of it. Usually with the very mild current strengths mentioned the obstruction will be felt to soften and the bougie will pass on. Often a second or third obstruction will be encountered in the same manner. The bougie should be invariably pushed on into the tympanum. Should the initial current strength be insufficient to overcome the obstruction, at the end of one minute another mille-ampere may be turned on; at the end of another minute, another mille-ampere, etc., until five mille-amperes current strength has been used or five minutes contact maintained. Should it then still resist it will be much better to desist and wait a few days before attempting it again. It may be attempted again in from two days to a week according to the swelling and

reaction which takes place. It is not unusual to pass easily through an obstruction at a second or third seance which seemed impossible at first.

In every case the bougie should be slowly withdrawn with the current still on, and the current then slowly turned off, to avoid a slight shock to the patient. Having passed through the tube to the tympanum, gentle catheter inflation may be practiced at the end of two days. It may be found that more air enters; on the contrary the tube may be so swollen up from the reaction that very little or no air enters, in which case all the patients distressing symptoms will be aggravated. (It is well to speak of this at the outset.)

Should you have succeeded in passing into the tympanum, you may rest assured that repeated inflations at intervals of two days will be almost certain after the first week, if not earlier, to show an increasing calibre of the tube, and improvement in symptoms.

Should the improvement be slight the bougie may be passed again at the end of two weeks, and so on until the tube is open enough, or one is satisfied that no more can be gained by further effort in that direction.

Often one passage has been sufficient. Other tubes have required repeated bougieing. Many have remained open for years; others for much shorter times.

One should avoid the mistake of using it too often, too hurriedly or too strong.

Small bougies; small current strength; considerable time and an immense amount of patience, are the best precepts to follow.

It is a tedious, difficult task; so much so that no man ought to take it up in a busy practice without having made an appointment in which he has sufficient time to do what he attempts. I had much rather do a mastoid operation, so far as the nervous strain is concerned, than attempt to bougie a difficult case.

I promise you all who are not using the method that you have many distinguished conferees who are getting results, while you are wondering what you will do with your cases; and that, should all of you abandon it as worthless, I still could not do so after the results obtained with it. Let me hasten to say that I by no means wish to convey the impression that I have never failed to make an improper selection, or have never failed to get the improvement expected in cases in which I thought the procedure indicated.

However, my successes so far outweigh my failures that I cannot avoid enthusiasm over the subject.

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SOME CASES OF ASTHMA TREATED BY REMOVAL OF THE MIDDLE TURBINATE.*

BY T. W. MOORE, M.D., HUNTINGTON, W. VA.

In looking over the subject of Asthma associated with intranasal disease I find that to Voltolini¹ is due the credit of arousing the interest of the profession to their relationship, but J. N. Mackenzie² has called attention to the fact that their association had been observed over two centuries before Voltolini reported his case; which was that of a man aged 33 whom he states was a constant sufferer with asthma and was cured by the removal of the polypi that filled both nares. As his book, in which the case is reported, was completed only a few months afterwards and the patient sent back to Ems in less than a fortnight after the operation, I think in the light of our present knowledge the permanency of the cure is not proven.

Hack³ reported 81 cases treated by intranasal operation on the inferior turbinates and septum, or removal of polypi. Twenty-five of these were not considered in his essay owing to the short time after the treatment. Thirty-three were cured and had remained so at the expiration of three years, seventeen were much improved and twelve not improved.

McBride,⁴ Kyle,⁵ Bosworth,⁶ and numerous other writers cite cases benefitted or cured by the removal of nasal polypi. Roe⁷ speaks of a case cured by the removal of hypertrophied tissue but does not state in what part of the nasal cavity this tissue was located, and any number of authors tell us of cases cured by removal of the intranasal disease, but no one, so far as I am aware mentions the diseased middle turbinate as an etiological factor or treatment confined to it as a remedial measure. This seems strange when we consider the great number of cases helped by the removal of polypi and remember that their most frequent attachment is the middle meatus and middle turbinate.⁸

Macdonald⁹ stands alone in claiming to have never seen a case of asthma benefitted by operation where the obstruction was in the middle meatus.

In my cases I was governed wholly by the diseased condition of the nose; to be more explicit, the intranasal condition demanded

* Read at the Eighth Annual Meeting of the Academy of Ophthalmology and Oto-Laryngology, Indianapolis, April 9 to 11, 1903.

treatment disregarding the asthma, therefore my cases all come under the first of Schmiegelow's¹⁰ three rules, which freely translated reads,—“When the clinical picture leads to a belief that the abnormal condition of the nasal cavities is a factor in the production of the asthmatic attack, which is to be inferred, when the asthmatic symptoms occur, or are aggravated with any increase in the nasal symptoms.”

Case 1, female aged 16, was brought to my office in October, 1899, to be treated for nasal obstruction. I found both nares filled with polypi attached to the middle turbinates and middle meati. Patient complained of attacks of asthma which she had daily and had had more or less frequently since infancy. I removed the polypi as thoroughly as patient would permit, and repeated the operation three times during the year, the last two times I found them only in the right nostril. At the fourth operation I removed the anterior end of the right middle turbinate and forthwith the attacks of asthma became less frequent, of shorter duration and less severe.

Six months later the patient returned asking if I could not cut more out of her nose and relieve her asthma entirely. I then removed the remainder of the right middle turbinate with the result that the patient reports in February of this year two attacks of asthma in the two years since the last operation, both occurring in December, one in 1901 and one in 1902, while suffering from a severe acute coryza, these being the only attacks of cold she has had during this period. The patient's paternal grandmother and an aunt were sufferers with asthma.

This is the youngest patient whom I know has been practically cured by intranasal operation.

Case 2, Mrs. S., aged 36 years. One sister has hay fever and asthma. This patient was first afflicted when two and one-half years old and has suffered more or less ever since, attacks increasing in severity and frequency as she grows older until at the time of operation she had not had a single night entirely free from asthma for several years, often sitting for days in a chair, suffering almost continually.

Her family physician brought her to me July 31st, last year, stating that he had exhausted his resources and wished me to examine her nose and see if there was anything abnormal. I found the nares very large and both inferior and middle turbinates greatly hypertrophied and crowded against the septum. I removed the anterior halves of both middle turbinates, expecting to cauterize the inferior ones at some subsequent period. The patient had been suffering

more than usual for several weeks. The operation relieved her completely and for six weeks she was entirely rid of the dreaded attacks, then a recurrence began, the paroxysms increasing in frequency and severity until November 11th, when I removed the remainder of the middle turbinates, with the result that patient was again completely relieved until in December when they returned with their old severity and in February they were quite as frequent as ever.

Unfortunately I was unable to control the pain with cocaine during the second operation and patient refused to allow me to touch the inferior turbinates badly as they needed treatment.

Case 3, Mrs. C., aged 32, no history of asthma in family. Patient suffered almost constantly from asthma from March, 1900, until operated upon in May, 1901. She was first afflicted while suffering with influenza accompanied by the usual severe rhinitis. This occurred about the seventh month of pregnancy. The attacks abated during her confinement but came on two days after labor and continued with greater or less severity.

Her physician at several times despaired of her life. After the operation she was sent to the country where she remained nearly three months improving all the time and returning home entirely free from asthma until the following April, when she contracted a severe cold and again suffered with her old affliction for ten days. Since this she has not been troubled excepting brief paroxysms occasionally which last only a few minutes and are relieved by sneezing which is usually accompanied by slight bleeding from the nostril operated upon.

The operation in this case consisted in the removal of the right middle turbinate. This was followed by a few drops of pus in the hiatus semi-lunaris, probably from the frontal sinus.

Case 4, Mrs. I. E. C., aged 27. Mother is asthmatic. Had attacks two or three times weekly never being spared more than three weeks, had suffered for nearly four years prior to the operation of removal of anterior ends of both middle turbinates in August, 1900. The improvement began at once and until the present she has not had attacks oftener than one in two or three months, her last one occurring in December. They are milder and of shorter duration.

I have operated upon six other cases where the patients had asthma three or four times yearly. Two are cured after two years. Two cases are improved; one has not reported and sufficient time has not elapsed since the last one was treated. In three of these the inferior turbinates were either cauterized or a portion excised.

Now to what conclusions do these cases lead us as to the relationship of asthma and intranasal disease. I trust that I may be pardoned if I quote from an editorial written in 1890¹¹ for it so aptly and clearly expresses my views.

"All that may be said is that wherever the nasal branches of the trigemini spread out in the nasal cavities, there will be found spots, irritation of which produces a reflex and in certain cases where resistance of the medullary ganglion is lowered, or their excitability increased, there results, instead of an ordinary simple reflex of the respiratory center such as sneezing, an overflow of nervous force, which passes down the phrenics to the diaphragm and possibly overflows to the vasomotor nervous cells in relation with these parts. What is very certain and admitted clinically is that there must be some abnormal state of excitability of the basal ganglia, which is vaguely understood under the terms neurasthenic or neurotic."

In my cases the only after-treatment was some bland oil, usually sabalol, as a spray, excepting two cases in which I gave an old asthmatic preparation containing

R	Tr. hyosciami	
	Spt. aeth. comp. aa	30.00
	Potassii iodidi	15.00
	Syrupi	30.00
	Aquae menth. pip. ad	150.00
Misce.	Sig. Two teaspoonfuls in water every two or three hours.	

This I have found one of the best antispasmodics in such cases.

I believe that the benefit derived by these patients was due to allaying the irritation to the nerve endings in the nose and very little if any to suggestion.

Case 2 had developed an instability of the control center and whilst the operation gave relief for awhile the debilitated condition of the nervous system needed only an irritant to again bring on the spasms, this was supplied by an attack of influenza.

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SOCIETY PROCEEDINGS.

ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

(Formerly the Western Ophthalmologic and Oto-Laryngologic Association.)

Eighth Annual Session, Indianapolis, Ind., April 9, 10, 11, 1903.

DR. W. L. BALLENGER (Chicago), President.

DR. D. T. VAIL (Cincinnati), Secretary.

(Continued from page 462, June issue.)

The Injection of Super-Heated Medicated Air in Diseases of the Nose and Ear.—By JOS. C. BECK, M.D., Chicago.

This paper was published in The Laryngoscope, May, 1903, page 368.

DISCUSSION.

DR. J. J. KYLE.—I want to express myself in favor of using super-heated air in the treatment of catarrhal conditions of the middle ear. I have been using it for the past year exclusively. I believe where inflation of the middle ear is indicated the use of cold air predisposes to congestion. The super-heated air will bring about a hyperæmic condition rather than congestion. This hyperæmia, if continued day after day, stimulates the absorption of the exudate. We thus bring about a very good result, especially in old catarrhal conditions, where as by the injection of medicated solutions such as pilocarpin, we are in danger of producing a good deal of inflammation. With the use of super-heated air, we are better able to control the amount of hyperæmia, judging the condition by the ocular appearance of the membrana tympani. So far as the relief of tinnitus is concerned, I have observed no flattering results from the use of super-heated air.

DR. J. A. STUCKY (Lexington, Ky.).—Perhaps no subject comes before us in which we are more interested than the treatment of the chronic suppurative conditions of the middle ear. If we can get sufficient heat there it is undoubtedly the ideal treatment. I would like the doctor to tell us how he knows how much heat he has. Does he depend on the sensation of the patient?

DR. PYNCHON.—I have used an air heater quite a good deal and one of its defects which I have noticed is what Dr. Stucky refers to.

It has occurred to me that if there could be put around this instrument one of those little circular thermometers it would be a good thing. They are not absolutely accurate, but one could easily learn what temperature it would register and it would thus be a guide which would be in front of the eye. This could be easily applied to the instrument.

It seems to me one of the principal indications for the use of hot air is pain. It is of more value in pain than anywhere else.

DR. VAIL.—I have not used this method of treatment to any great extent. I used the electric device made by Meyrowitz of New York years ago, but I could not see that the current of hot air directed on the drum head had any effect. I have found the inflation of warm air from Politzer's blow bag to be a very useful and grateful method of treating acute catarrhal cases of otitis media. I can appreciate from my own standpoint the difference between hot and cold air in the middle ear. I once had an attack of acute catarrhal otitis media and was Politzerized with warm air. The treatment was very grateful. I felt better immediately. I sometimes keep my blowbag on the radiator where it is always hot, instead of in a drawer, where it more or less cold. I still use the old Politzer method of inflation in these cases; it is safe and gives the best relief. I use the catheter in chronic cases, but prefer the Politzer method in acute troubles.

DR. BECK (closing discussion).—The difficulty in the Eustachian tube route is that the catheter is too hot and the patient cannot stand it, and the wood fibre catheter was selected in order to control the heat. In a case of atrophic rhinitis I found the heat was borne much better than ordinarily. In reply to Dr. Stucky, in the experiments I made, will say I took a chemical thermometer, made an artificial external canal which I occluded like the middle ear. Then the instrument with the tip was passed into this canal. (Reads from paper.) "In a case of atrophic rhinitis, with a large perforation in the tympanic membrane, etc." I take the tube and put a thermometer at the point where the heat would strike the ear. I was in hopes Dr. Vail would discuss the paper at length, for I selected him as the victim to try my instrument first.

Naso-Pharyngeal Fibroma, Etc.—By J. A. STUCKY, M.D.

This paper will be published in a subsequent issue of The Laryngoscope.

DISCUSSION.

DR. JOS. BECK.—Last year at the meeting of the Middle Section of the Am. Med. Ass'n, I reported in conjunction with Dr. Holmes

three cases of fibroma of the nose which were diagnosed as sarcoma, although only one proved to be such. The operation was done, not through the nose, but through the superior maxilla. One case was not ligated and that was reported as dead shortly after operation. In most of the cases reported by Holmes and Loeb the pedicle of these tumors were near the sphenoid bone. The two cases I reported were nearer the middle of the nose and consequently could not be operated on by the route described by the writer. It was necessary to remove the maxillary bone and empty the antrum, which was filled with fibrous masses. This year I had the pleasure of having a case which was diagnosed as a mucous polypus which could be seen in the post-nasal space, and its firm attachments led me to believe it was more than a myxoma. The trouble in the operation was in the engaging of a snare, and the doctor decided to take a heavy wire and with the help of the finger post-nasally pass it around and then thread it. It was the size of the doctor's second case, one of the largest masses I ever saw. Histologically it proved to be a fibroma. The bleeding after the operation was not marked.

DR. BARNHILL.—I wish to exhibit this specimen of a fibroid removed from the naso-pharynx of a man twenty years of age, for which a specially constructed steel snare was used, with canula large enough to admit a No. 7 steel wire. After four hours effort in tightening the loop, much to my chagrin, the canula doubled and the wire broke, rendering it necessary to abandon the operation or devise a new method. I pulled the canula away from the wires and re-threaded them into that of the Peter's tonsil snare, which proved entirely sufficient and severed the large mass much to my gratification.

I have seen several cases of naso-pharyngeal fibroma in the past few years, two of which I considered inoperable. The first, a boy ten years old was seen four years ago. The growth completely filled the naso-pharyngeal space, crowding the palate forward, immobilizing it, and sending a branch into one nostril of sufficient size to completely block it, and deform the cheek by its pressure. I have seen the boy recently and noted that he is no worse in any way, the size of the fibroid remaining about the same, and the boy's health fairly good. The late Dr. W. V. Morgan, an eminent surgeon of this city advised against an operation.

The second case was of a man about 30 years of age, in whom I believed the growth had been changed to one of malignant nature by frequent electro-cautery puncture, done for the purpose of reducing

the growth. This case died of inanition, the size of the growth and the glandular infiltration causing final inability to swallow anything.

C. L. MINOR (Springfield).—I have at the present time a case of nasal fibroma springing from the posterior end of the middle turbinal. I can appreciate the difficulties that the gentlemen have had in removing them for I have broken a No. 6 piano wire on each of four different occasions in trying to remove the growth with a cold wire snare. The growth is as hard as a rock and can not be removed by any ordinary methods usually employed in nasal operations. Dr. Shurly advised me to loop the point of a galvano-cautery around the base and remove it in that way. I hope that he will relate to the society the method that he advised me to pursue.

DR. W. H. PETERS (Lafayette, Ind.).—I have removed a fibroma during the past year with my nasal snare. I applied the snare through the nose, over as large a portion of the growth as possible to get in the loop. The hemorrhage was not great. The case was a boy of 14. I used cocain and the operation required three sittings during a period of about an hour and a half. I have plenty of muscle, but it required all the strength of both hands to get through the growth. The growth had its origin in the nasal passages, and filled the whole of the naso-pharynx. In growths such as Dr. Stucky reports, however, no snare could be used, as it would be impossible to apply it.

DR. HAL FOSTER (Kansas City, Mo.).—I wish to congratulate Dr. Stucky on the success of his operations and the beautiful forceps he has devised. I have had some experience with extensive growths. Dr. Murphy was in the office and saw this patient and published the case in a journal. It was very large. I would vouch for what he says about snares, but the modification of Peter's snare seems to me meets the indication if you can get around the growth. If it can possibly be avoided, I think it is much better not to give these cases chloroform, because when you do they are much more apt to bleed.

I think the laryngologist should be prepared to meet any emergency that arises. Frequently you will have to do transfusion if you are not careful. The hemorrhage comes with a gush and is certainly serious. I used adrenalin; had a considerable hemorrhage but controlled it. I used the snare and then the forceps as the obstetricians do, and tamponed the nose very rapidly, with good results. I approach these cases with great anxiety and feel greatly relieved when the growth is removed.

DR. J. P. MORRELL (Terre Haute).—I am glad of the opportunity of reporting a case of which the account given by the doctor of his

first case is a fair description. The patient was 17 years of age. The growth completely filled the right naris, and could be seen by raising the tip of the nose. A change in the contour of the bridge of the nose was also apparent. Upon elevating the palate the growth could be seen behind. I had had no experience in the removal of such growths. The removal of the growth had been previously attempted by another physician by whom two or three wires had been broken, and whose efforts had been followed by such violent hemorrhage that he desisted from further attempts. My attempt to remove a portion of it with a cold snare was rewarded with a broken wire. At most but a small portion of its anterior surface could be engaged in a snare. The growth so filled the cavity that it was impossible to surround any considerable portion of it by wire. I therefore adopted this method; With an electric knife I made a vertical channel into the growth and crossed this by a horizontal one. This divided the growth into fragments around which I could place the soft wire of the electric snare. By repeating this I was able in two or three sittings to reach the plane of the posterior edge of the vomer. I here found that the growth was adherent to the upper surface of the palate which effectually prevented my engaging it in the loop of the snare. I, however, succeeded in insinuating a wire with its end protected between the growth and the outer wall of the naso-pharynx into the oro-pharynx where I grasped it by forceps and pulled it out of the mouth. I was also successful in passing another wire with some difficulty around behind the vomer and to the opposite side of the growth into the oro-pharynx. Pulling this also out of the mouth the ends of the two wires were united. Traction upon the nasal end of one of the wires drew the wire loop thus formed out of the nostril until the junction was reached when the two ends were threaded in the snare, and traction made upon the growth. Then graduated traction was made extending over two days when the attachment was severed, and the growth removed. I have since then repeated the channeling process in removal of growths that entirely filled the nares, and consider it a very practical and ready means of getting rid of what would otherwise be a very troublesome condition.

DR SHURLY.—It is unusual to get the complications Dr. Stucky has spoken of. It is usual in operating to first destroy the adhesions, however long that may take, and subsequently arrange for the operation of its removal. In one instance I adopted the method of removing it piecemeal. This is not always as satisfactory. The cold snare is also quite unsatisfactory, although I have removed them with the cold snare, by having the snare made of extraordi-

narly heavy wire and using No. 8 or No. 12 wire, although sometimes No. 18 will do better. The smaller the wire that will hold, the easier, because the smaller wire will cut through more readily. With the ordinary cold snare I found it almost impossible, without some additional guide, to keep the loop around the tumor. I pass the platinum wire through the nose; pass the fingers into the nasopharynx about the tumor, and gradually put the wire up behind the tumor with the fingers, or a probe which is to be bent. In that way, by threading the wire up over the tumor, I get the canula up to it. I then turn on the current, and by gentle traction cut through and remove the tumor. I have never met with these terrible complications, nor have I met with a tumor as large as the doctor's unless it was of a sarcomatous nature, in which case, the only way to do, perhaps, is to operate from the outside, cutting away the bone and all tissues as far as possible, in order to remove the whole sarcoma. I have never had success in removing them by the internal method when large, because I was never able to get all the growth out. A re-growth in most cases takes place. In growths of such a nature it would be very unsatisfactory to leave any of it.

DR. STUCKY (closing).—I appreciate the liberal discussion. In Dr. Beck's remarks, there is one point we must distinctly make, and that is the difference between a mixed fibroma and a true fibroma. I am sorry I did not have time to read all the reports and make this clear.

In answer to Dr. Barnhill, would say that I believe the electro cautery in these cases does harm and that by its use you stimulate the growth. I am sure it was true of the first case I had.

As to the remarks of Drs. Minor and Shurly regarding the attachment to the posterior turbinal, it is possible when located at this point to snare them, bone and all. But one point I tried to emphasize about this case was that the attachment involved the whole of the basilar process and extended up into the nose. You can no more make a loop of any kind to snare that than you can snare this piece of marble.

About the case described by Dr. Peters I do not see how with a snare of any kind I could have cut off this growth; and replying also to Dr. Foster, if I had made a little opening and attempted to channel through this growth, the patient would have bled to death.

About the adhesions, there is a difference between the adhesions and the attachment. I broke up the adhesions gradually and kept them separated with strips of gauze. The main attachment was on the basilar process.

An Unusual Case of Spontaneous, Bilateral Hemorrhage from the Ear.—BY M. A. GOLDSTEIN, M.D., St. Louis, Mo.

This paper will be published in a subsequent issue of The Laryngoscope.

DISCUSSION.

DR. J. G. DORSEY (Wichita, Kan.).—I was very much interested in Dr. Goldstein's report, for I had a case very similar last fall. A girl of 16 was brought to me for on-coming deafness in both ears. I washed some epithelial scales from the ear with the syringe, and three days afterward spontaneous hemorrhage from the left ear occurred. The girl developed some hysterical symptoms. For two months this occurred, but I could not find the place whence it came. The parts all appeared to be normal. There was complete bilateral deafness. I will say that prior to the hemorrhage from the ear—in fact prior to my seeing her at all—she had hemorrhage from the stomach, but from that time there were no other symptoms of general hemorrhage. The case was under my care for about eight weeks. It was not accompanied by vicarious menstruation. She menstruated twice, as normally as usual while under my care, which seemed to have no effect on the hemorrhage.

DR. CONKEY.—While this paper was being read, a similar case was presented to my mind, yet different in many ways. I saw this case in consultation, and saw it several times. The history of the case was that there had been hemorrhages and watery discharges from the external ear. On examination I found an absolutely normal condition, both of the auditory canal and of the membrana tympani. The patient had had headache for several days. I referred the case back to the physician and told him as far as I could see nothing was wrong with the patient. The hearing was good. A few days afterward the doctor reported she had another hemorrhage, and from that time on he reported repeated hemorrhages. I did not see the case for about a month. I was called one night and found her in an apparently critical condition; suffering intense pain. I examined her again and found no lesion whatever and no inflammatory condition. I thought at first there might be a brain lesion. I examined the retina and found no trouble at all. I told the doctor I believed we had a case of hysteria, but I was in some doubt. For several months this woman continued to have these attacks, followed by discharges, and with the discharges there was relief. Neither I nor the attending physician ever saw the discharge. Finally she was sent to a hospital where I found her complaining of great pain in the ear and symptoms simu-

lating paralysis. Upon pressure over the mastoid there seemed to be some tenderness, and although I believed the case was one of hysteria it seemed to me that strong measures were needed to get her out of the state in which she had fallen. It was a desperate case and required desperate measures. I advised a mastoid operation. I told her this must be done, and if necessary I would open the brain cavity. This statement had the desired effect upon her. From that time on she began to improve. She was soon able to leave the hospital and since then (six months ago), I have not heard from the case. I believe it was hysterical.

I wish to add further that at the time of the last examination there was considerable dry blood in the external auditory canal, although there was no fluid.

DR. VAIL.—I have seen one case of hysterical hemorrhage from the ear, in which the patient was caught in the act of wounding the ear by means of a hat pin. Of course as soon as this was discovered, she was accused and put under surveillance.

The case of Dr. Goldstein's presents such peculiar and unique features that there is an uncertainty, in my mind at least, as to whether it was hysterical or not. I cannot understand how the wounding of the ear could produce such profuse discharge of sero-sanguinous fluid. The secretion was found to be something of the nature of cerebro-spinal fluid stained with some blood corpuscles. We are any of us liable to run across this condition, and I wish the doctor in closing would give us his opinion as to what he thinks it was.

DR. GOLDSTEIN.—I wish to ask Dr. Dorsey and Dr. Conkey whether provisions were made in their respective cases here reported for the definite exclusion of simulation, or the wounding of the external parts by the patient, or the introduction extraneously of blood or other fluid?

DR. DORSEY (answering Dr. Goldstein's question).—My case was in one of the catholic institutions, and I had a sister delegated to watch this girl carefully. It was more likely to appear when she was with people than when alone. The hemorrhage was abundant and more than could be produced by a slight injury of the ear. It was like a hemorrhage from the nose. I have seen the ear filled with blood. I immediately inspected it and found no place where blood could come from.

DR. CONKEY (answering Dr. Goldstein).—In this case there was no reason for malingering. She was at home and a poor woman. While I made no provision to prevent it, there was no real object in it.

DR. GOLDSTEIN (closing).—As far as I have studied this case, and I have tried to gather every detail as completely as possible, one of the most potent and unusual features was the absolute exclusion of simulation and of the extraneous introduction of any fluid or substance.

Quite a number of cases have been reported of hemorrhage or exudate from the ear, with intact membrane tympani, where malin-gering was determined as the cause. In some of these cases of an intensely hysterical type, the patient perhaps unconsciously provoked such hemorrhage either by injury to the auditory canal or by the introduction of fluids or irritants into the ear by way of the canal.

Another puzzling feature in my case was the determination of the character of the fluid. After careful and repeated examinations, it was decided that this fluid was not cerebro-spinal in character, because neither the specific gravity, the chemical reaction nor the microscopic appearance indicated it. The examination showed specific gravity 1040, the fluid of the consistency and character of serum, containing a few red blood corpuscles, and polynuclear cells.

Even with the accurate data at our command in this case, I have been unable to reach any definite conclusions or diagnosis. I might advance as a theory that of a neurosis of a vaso-motor type, where an intermittent paralysis localized in the mucosa of the tympanum would allow of a sufficient osmosis or transudation of serum through the capillary blood vessels until the middle ear cavity was filled to a sufficient extent to allow the fluid to syphon out through some mechanical or congenital crack or fissure into the external auditory canal. An intense hysterical temperament like that possessed by my patient would further predispose to some such vaso-motor irregularity.

I was careful not to advance any hypothesis or theory in reporting my case, because I thought it would detract from the actual value of the report. As a theory, the one which I have just stated occurs to me as the only one which may have a possible bearing on the etiology.

Some Cases of Asthma Treated by Removal of Middle Turbinate.—By T. W. MOORE, M.D., Huntington, W. Va.

This paper will be published in the July issue of The Laryngoscope, page 533.

DISCUSSION.

DR. J. W. MURPHY (Cincinnati).—This subject of asthma has given us all a good deal of worry. No operation seems to be a panacea for the cure of the disease. The exact cause and etiology of this

disease seems as obscure to-day as ever it has been. I have operated on quite a number of these cases for this condition and now and then a case seems to be materially benefitted, but in the majority of cases the condition returns. There seems to be a vaso-motor cause here and most any operation seems to benefit the case for a short time. I have at the present time a gentleman who is a great sufferer from asthma and I have operated on him three or four times. Every operation helps for a while; but there is nothing more to operate on and I do not know what we will do when he comes back again. I think it is Bosworth who claims that 80 or 90 per cent of asthmatic cases can be benefitted by operation, but my experience has not been such. I think in a great many of these cases there must be a great deal in suggestion. I had a case under observation several years ago in which a large spur was removed from the septum and the nose was put in as good condition as I was able to, but the attack of asthma returned in a few months as severely as before. Then the patient went south and the climatic change helped the condition, but as soon as the patient returned from Texas the asthma returned.

DR. VAIL.—Dr. Murphy's remarks almost explain themselves. He said that a great many of these cases are amenable to suggestive therapeutics. The suggestive treatment is the very thing they get from the Osteopath. The Osteopath will generally claim that the "spheno-palatine" duct is closed, or that the "25th cervical vertebra" is out of joint, and so impress the patient with these wonderful things.

I knew a young medical man who had suffered for years with asthma. About three years ago he took treatment from an Osteopath who informed him that his ensiform cartilage was out of joint. One treatment cured him—so he stated to me. He was so impressed with the tenets of the osteopathic school that he turned osteopath himself. Lately I have learned that his asthma is as bad as ever. I presume that familiarity with the workings of osteopathy has staggered his faith to the extent that he is no longer a fit subject for their suggestive treatment.

DR. GOLDSTEIN.—There is no doubt of the fact that hypertrophied turbinals occasionally play an important part in the etiology of localized asthma, and that occasionally operative interference will give you the radical result you desire. To me the most important feature would be to determine just when to operate and just when to let this condition alone.

DR. W. R. MURRAY (Minneapolis, Minn.).—I believe a number of these cases can be classed as neuroses, but a large number depend

on nasal lesions and the removal of these will often result in a cure. I am not prepared with statistics, but I have operated on a number in the past four years, and I endorse the writer's views as to the middle turbinal being frequently the seat of the disease. I cannot say how permanent the relief is after operation, but do not recollect any case that has come back where the asthma was relieved at the time. But sometimes we do not get a cure of the asthma after removal of the lesions of the nose. I remember one case, the most violent I had ever seen, where the man had been subject to attacks for fifteen years. He had a prominent nasal lesion. The middle turbinals were hypertrophied and there were nasal polypi, also enlarged inferior turbinals. I operated, but the asthmatic attacks continued and he has suffered practically as much as before the operation. I remember six or eight cases in the past three or four years where the attacks have disappeared within a week of the time of the operation, and as far as I know, in those cases none have recurred.

DR. BARNHILL (Indianapolis, Ind.).—We in Indianapolis live in the center of the rag-weed district of the United States, as well as in the center of its population, and therefore any paper on the subject Dr. Moore has just presented, becomes of the greatest interest, because here in Indiana the rhinologist sees annually a large number of cases of asthma and hay asthma.

Some years ago I read a paper on the same subject, and being aware of the criticism that had been made of the surgical means of treating asthma, I attempted to ascertain if possible, if there was any easier, pleasanter or more certain means of cure. I therefore wrote to each professor of general medicine in each leading regular medical college in the Middle west, asking if he had ever had a case in which he had cured a case of hay asthma by drugs alone. In every answer received the report was negative. Such is not the case with surgical means, for many rhinologists have reported cures following well directed intra-nasal surgery, coupled with careful general medication. I believe the region of the middle turbinate to be most often at fault in these cases, and that by removing areas of pressure, and securing better drainage from the accessory cavities which open under the middle turbinate body, we can secure good and often brilliant results. Much has been written about the nervous element which accompanies these cases. I believe this is often a result of the nasal pressure and faulty sinus drainage, for certainly judging from the amount of local suffering endured by these patients it would not seem unreasonable if their nervousness was attributed as a result of the nasal condition, and not a causative factor of the asthma. I have recently removed

the middle turbinate, together with a large number of concealed polypi in such a case. Several years ago I had removed several polypi from the same case, which were large enough to be seen in the nasal fossa. This helped, but the sneezing, and asthma continued unabated. Several times since polypi were again removed with like result. Recently I insisted that the patient permit more radical methods, which was done, and I removed the middle turbinal, which exposed many polypi springing from the ethmoid and about the ostium maxillaire. These were also removed, and the result is entirely satisfactory to the patient, and I believe a cure will result. Certainly in cases where there is a clear condition of nasal obstruction and faulty sinus drainage, our best results must come through surgical methods.

DR. PYNCHON.—I personally am disposed to think that asthma is chiefly due to the traveling downwards of secretions from the post-nasal space. Why such secretions do not always produce it, but do in certain cases, I cannot say. Enlargement of the middle turbinal is acknowledged by all to be a factor in hay fever. In my paper yesterday I stated that enlargement of the middle turbinal impairs the ventilation and drainage of the attic of the nose. By this impairment is produced catarrhal sinusitis, the secretion from which travels to the post nasal space, as emphasized by Cobb. Dr. Moore stated that he did not know of another writer who had called attention to middle turbinal hypertrophy as a cause of asthma. In a paper I read at New Orleans four years ago I called attention to this fact, and emphasized it in the paper I read at Cincinnati two years ago.

DR. GOLDSTEIN.—Last July or August Dr. G. B. Holt of New York, one of the older surgeons of the Manhattan Eye and Ear Hospital, published a paper in *THE LARYNGOSCOPE* on favorable results in the removal of turbinal hypertrophies in the treatment of hay fever.

DR. MOORE (concluding).—I am very glad to have the indorsement of the surgical treatment of this disease by so many distinguished members of the Academy. I think that unless we watch these cases closely afterwards we are apt to think that they are cured when they are not. When I started this paper I was sure that three of these cases were cured and I did not know until I interviewed the patients that they had had any subsequent attacks.

I think that the middle turbinate is an important etiological factor, but we may remove the cause as we often see in traumatic epilepsy and still the neurosis will remain.

The Present Status of the Treatment of Mastoiditis.—By GEO.
F. KEIPER, M.D., Lafayette, Ind.

AND

A Synopsis of My First Hundred Mastoid Operations.—By C.
BARCK, M.D., St. Louis, Mo.

These papers will be published in a subsequent issue of The Laryngoscope.

A motion was made and carried to discuss these two papers together.

DISCUSSION.

DR. J. W. MURPHY (Cincinnati).—In reference to Dr. Keiper's paper as to whether we should use heat or cold in the early stages, we have good authorities on both sides. If I see the case at a very early stage I am partial to the ice cap, but never for more than 24 hours. If there is no improvement at the end of 24 hours, I then go to the other extreme, and use heat. I much prefer dry heat to moist, and recently I have been able to apply the dry heat quite conveniently by means of the electric globes whenever in the hospital or the home we have the electrical current. I use one of these drop lights on a cord, with a key on it, so the current can be controlled by the patient. I wrap the globe in a towel and place beside the ear within the control of the patient. As it gets too hot it can be turned out. It must be watched and the patient not allowed to go to sleep, as these get very hot; I find a napkin can be scorched and almost burned by the heat from one of these globes. I also like to douche these ears with very hot water. I like the Lucae ear douche in which a return current is allowed to escape from the ear. It is attached to the fountain syringe and the little hard rubber tube placed in the ear so the current of hot water gives the most satisfactory results. The patient can apply this himself. The symptoms of mastoiditis must be carefully watched, and as the doctor said, cold is apt to mask dangerous symptoms; therefore if the symptoms do not improve in a short time the cold should not be persisted in. I have seen during the past winter a number of cases, resulting from the recent epidemic of gripe. It has seemed to have a special tendency to involve the middle ear. Last week I had a case of this kind, in which cold was applied without beneficial results; then I tried heat. The patient never had a temperature to exceed 99 degrees, and deceived me as to his reports each morning, saying he had rested well and was getting along nicely. We all hate to do a mastoid opera-

tion if there is any hope otherwise, and I took the patient's statement; but a few days later I noticed a peculiar bulging of the posterior superior wall of the canal and refused longer to be responsible for the case, telling him I was sure he ought to have the mastoid opened. He consented to the operation and I found an abscess at the tip of the mastoid in contact with the lateral sinus. The abscess was larger than a pigeon's egg and full of offensive pus, and yet the man had few symptoms of mastoiditis, which shows how often we can be deceived.

The cases reported by Dr. Barck were interesting and show the difficulties we frequently encounter in being unable to diagnose the sub or extra-dural abscess in these cases, especially in children. In the past six weeks I had a case that demonstrated this clearly. The child had an attack of grippe and there were very few symptoms; no discharge from the ear, but a constant complaint of pain. A paracentesis was made and a drop of bloody serum exuded. Several days later the mastoid was opened and a small amount of granular tissue, in a comparatively healthy ear, was removed. It was decided in consultation that probably there was some inflammation of the brain, and the wound was opened up and the integument removed. No abscess was found. Several days later the symptoms still pointed so strongly to a brain lesion that the wound was again opened by a general surgeon in consultation and further exploration revealed no abscess. Meningitis resulted fatally a few days later.

DR. GOLDSTEIN.—There is very little in either paper that will bear discussion, one being a synopsis to date and the other simply statistical data; but the question developed by Dr. Murphy, the comparative value of thermal applications is interesting, and I think it is just as much in controversy to-day as it was five or ten years ago. Just as the general surgeon in his treatment of inflammations see-saws back and forth between heat and cold, so too, does the otologist. I am glad to endorse Dr. Murphy's suggestions in the case which he has related, which is of the class we see so much of now, the acute grippe inflammations of the ear, in which the actual pathological inroads, brought to our notice when the mastoid is opened, occur with remarkable rapidity. Neither heat nor cold will benefit a case where mastoid symptoms develop a day or two after an acute ear ache following influenza. You will find granulations almost filling the antrum. How heat or cold or other agent will relieve that condition I fail to see.

I would like to ask Dr. Barck in regard to one case to which he refers which has an interesting history—that of the recurring mas-

toid operation. At about what time was that done? Was it done within the time of the recent radical operation? (Dr. Barck: In 1892-94-95.)

Unless there was a distinctly tubercular or other equally progressive specific infection in that mastoid, there should not have been an occasion for such frequent operating.

DR. G. W. SPOHN (Elkhart, Ind.).—I was very much interested in both papers; but one thing not mentioned was the use of electricity. I tried it once in a case for operation, where the consent of the family could not be obtained. The ear bulged out and was in an edematous condition in the region of the mastoid. At the fifth and sixth days the temperature was $101\frac{1}{2}$ and 102 . I used the high frequency current for fifteen minutes lightly over the mastoid, for two days in succession. To my surprise, after the second application there was great improvement. In four days the fever had disappeared and the case made a good recovery. I applied the current to relieve the pain, as I had done previously in cases of a neurotic origin.

I have had old chronic cases of otorrhoea that were carefully treated for many months with no apparent improvement, which were cured with the application of the X-Ray. It seems to me the old mastoid sinuses, left after operation, could be more speedily cured with the X-Ray. It has a stimulating action that is wonderful in pus discharging sinuses. The ray is used very successfully in abdominal sinuses by such renowned surgeons as Murphy, Senn and many others.

DR. BRADFIELD.—I would like to ask about bleeding subsequent to an acute otitis media; what is the experience as to the benefit derived from free hemorrhage?

DR. L. C. CLINE (Indianapolis, Ind.).—I wish to speak a word in reference to the heat. The question reminds me of the bicycle fad we had a few years ago; if you were lean you should ride the wheel to become fat; and if you were fat you should ride to become thin. This is the case with the hot application. It is all right to use heat, but I doubt its efficacy in a great many cases. We have got to do something if we have mastoid involvement, or if we are threatened with it. I think if we would turn our attention to flushing the alimentary canal we would do better than by applying cold or heat. A little calomel followed by Rochelle salts or anything to clean out the tract and put the house in order. If it is a surgical case, nothing will do good but surgery. If the pus has formed in the mastoid cells I do not believe that either heat or cold will stop it. I believe

the internal treatment will come nearer doing it than hot or cold applications. The point is to find out when we should operate, and then operate without further delay. Many cases die from neglect to operate soon enough. When we find the bulging of the posterior superior wall we should become suspicious, and as Dr. Murphy said, we should insist on the operation or dismiss the case.

DR. W. R. MURRAY (Minneapolis).—Referring to Dr. Keiper's paper, I do not believe there is any therapeutic effect but the relief of pain in the ice pack. It is grateful to the patient, but it is capable of masking a great many symptoms and I do not think it has much effect on the mastoid disease. It should not be applied for more than 24 hours.

I never saw a case clear up after there was bulging of the superior and posterior walls of the canal. When that occurs, the indication is absolutely for operation.

Referring to Dr. Barck's paper, which has been very interesting, I would like to ask whether, in his cases of sinus thrombosis, it is always his policy to ligate the jugular vein before going into the sinus. I would also ask his policy in the after-treatment for brain abscess in the way of dressings and the frequency with which they are made.

DR. BARCK (closing).—As regards the relative merits of heat and cold, I believe this question is still an open one in medicine as well as in surgery. Personally, I prefer cold applications in children and in young robust people. In middle aged and old persons, I prefer warm or hot applications, usually by the dry method. I consider, however, this point of minor importance. In my opinion, the best remedy to abort an acute mastoiditis is an early paracentesis. By this procedure, certainly a number of them may be prevented. But there are instances where neither a paracentesis nor any form of application can prevent mastoid affection. The cause lies in the peculiar anatomical condition of the temporal bone. I have examined a number of these as to the relative position of the antrum and the middle ear. While in some of them, the floor of the antrum was just as high as the opening of the aditus into the middle ear, or even slightly higher, in others it was decidedly lower. In the former, there is a relatively free communication between the antrum and the middle ear and so even after the infection had reached the antrum, there is an outlet for the secretion. In the latter, there is a kind of cul-de-sac, and when this is affected, it will in all probabilities not recede, no matter what kind of external application is made.

As for bleeding by leeches or other means, I use it quite fre-

quently in well nourished individuals, and believe it acted well in a number of instances.

In answer to Dr. Goldstein, as to the case, which was operated upon four times, will say, that there was never an indication to perform a radical operation, because there was no chronic suppuration from the middle ear. It was in every instance an acute otitis and acute mastoiditis—in fact the most acute and rapid one I ever saw. After each operation, the otorrhea ceased, the perforation of the tympanic membrane closed, and the hearing returned about to the normal. It was so a year after the third operation, as stated. I never saw any reason to sacrifice the chain of healthy ossicles, and with them the hearing. I simply reported the case, which was certainly unique and is still an enigma to me in many points and as to its etiology.

In regard to the drainage in brain abscess, would like to state that I believe in frequent dressings. After the operation I usually allow two days to elapse, and then institute daily dressings.

Otorrhagia in Typhoid Fever—**RAOULT AND SPECKER**—*Rev. Heb. de Laryngologie, D'Otologie et de Rhinologie.* July 26, 1902.

In view of the rarity of otorrhagia in the course of typhoid fever, Raoult and Specker report a case of otitis media with free otorrhagia in a case of well-marked enteric fever.

Dr. Specker was called to a girl of 19 who had been suffering from typhoid fever for 18 days. The patient had at first an intestinal hemorrhage, and the following day a rather free epistaxis and at the same time an otorrhagia. In spite of the treatment, the hemorrhage from the ear continued, and diminished only under the local application of peroxide of hydrogen. An otoscopic examination then showed a small perforation of the tympanum, from which pus was discharged. Injections of mercuric chloride and applications of sublimate glycerine were commenced, and the discharge gradually ceased, and the patient commenced to improve. The author insists upon the extreme rarity of otorrhagia in the course of typhoid fever. In a case already reported by Molinie, the hemorrhage came from the neighborhood of the tympanum membrane, but did not come from the middle ear.

W. SCHEPPEGRELL.

NEW YORK ACADEMY OF MEDICINE.
SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, May 27, 1903.

WALTER F. CHAPPELL, Chairman.

Bony Cyst of the Antrum.

DR. C. G. COAKLEY presented a woman of twenty-nine years, who about twenty years ago developed a swelling on the hard palate near the median line. It interfered somewhat with speech but never disappeared. Three or four years ago a painless swelling of the cheek bone was first noticed. Two years ago it increased in size, and this was associated with pain in the second bicuspid tooth. This tooth was extracted without relief or effect on the swelling. Last February the swelling became larger, and a physician inserted a needle at the most prominent part, and evacuated some yellowish jelly-like material. From that time the pain became more severe, and it was necessary to reopen the puncture several times. Very soon the discharge became foul. The speaker said he had then seen her. Finding a bony cyst, an attempt was made to remove it entire, but this was impossible because a T-shaped prolongation extended under the nasal cavity. Microscopical examination was made of some of the material, and it showed a bony wall on one side of which was thickened connective tissue lined with epithelium, and on the other side was to be found all of the structure of the antral mucous membrane.

Disease of the Accessory Sinuses.

DR. T. PASSMORE BERENS presented a patient who gave a history of twelve years of suppuration. All of the accessory sinuses except the left frontal appeared to have been affected all this time. The trouble began with an attack of scarlet fever. The operation on the right side was done eleven weeks ago, and that on the other side, eight weeks ago. The right frontal had not yet healed. The operations done were those known as the "Jansen operations."

Fibroma of Naso-pharynx.

DR. THOMAS J. HARRIS presented a young man of 16 years whom he had exhibited about four months ago. At that time a number of those present saw the case and agreed in the diagnosis of fibroma. It completely filled the naso-pharynx so that breathing was entirely

obstructed on the right side. Several attempts were made to remove the growth by the cold wire snare, but unsuccessfully, and then, at Dr. Coffin's suggestion, he had used his post-nasal syringe for injecting monochloroacetic acid. Some twenty injections of from one to three minimums had been made in most instances by Dr. Coffin and with little or no reaction. When the attempt was made to adjust the snare there had been profuse bleeding. No bleeding at all had followed the injections. The growth had been reduced from one-half to two-thirds under this treatment, and there was free breathing on both sides of the nose. Recently it had been discovered that there was a protuberance from each side of the nose, and that they met behind, forming a band, thus explaining the failure with the snare. This particular mode of treatment was presented because of its novelty.

A Case of Instant Loss of Vision in the Right Eye Following Paraffin Injection for Nasal Deformity.

DR. LEE MAIDMENT HURD reported this case. The patient was a man, thirty-two years of age, who gave no history of syphilis. The history pointed to an abscess of the septum as the cause of the nasal deformity. Two injections were successfully given, and some months later the man returned asking for another paraffin injection. This was given an inch above the tip of the nose very close to the former site of injection. The patient found immediately after the injection that his vision in the right eye was lost. Dr. Ward A. Holden examined the patient's right eye a few minutes later and found a condition typical of embolism of the central artery of the retina. Digitalis and nitroglycerine were used along with manipulations for twenty-four hours, but without dislodging the embolus.

DR. J. LEONARD CORNING was asked to discuss the case, the Chairman stating that Dr. Corning was the first one who had made use of injections of paraffin. Dr. Corning said that he had invented and employed the method for neurological purposes. In 1891 he was anxious to find some means of anchoring medicinal substances around the peripheral nerves, and the ligature being inapplicable, it had occurred to him to attempt to block the capillaries by an injection, and then by means of a spray or rhigolene or ether to keep the injected matter in position as long as desired. For the first injection he made use of cocoa butter. Some time afterward he was called to see a case of torticollis, and he injected into the affected muscle (the splenius) of this patient paraffin with an admixture of cocoa butter. In this way he obtained an intra-muscular splint and relieved the spasm completely. A year or two later he

divided a nerve and injected paraffin so as to separate the divided ends of the nerve. The speaker said that whenever possible the circulation should be arrested before making the injection, and that the melting point of the injected material should be kept as high as possible, probably up to 112 degrees or 115 degrees F. He believed that immediately after the injection the paraffin should be hardened by the application of an ether spray. Many years ago he had tried the insertion of a membrane and filling this with the injection material. He saw no reason why a styptic might not be used temporarily to secure occlusion of the vessels until the paraffin had become hard. An account of these pioneer undertakings may be found in Dr. Corning's original articles. (See *The New York Medical Journal*, December 26, 1891, and April 14th 1894. Also *The Medical Record*, December 5th, 1896.) A synopsis of these papers may be found in an editorial article, contained in *The Medical Record*, February 1, 1902, page 172.

DR. FRANCIS J. QUINLAN said that it had been his custom in these cases to circumscribe the tissues in order to prevent diffusion of the wax by means of a ring of rubber and block tin. He had just made his 254th injection of paraffin and had not yet met with any serious mishap, although he had had three cases of suppuration occurring in syphilitic or tuberculous subjects. It was his practice to apply a spray of alcohol for a few seconds after the injection in order to secure a better refrigeration of the paraffin.

DR. DAVID WEBSTER said that it was, of course, possible that the embolism was a coincidence, but this was not at all probable; it was far more reasonable to believe that some of the paraffin was conveyed through the circulation to the central artery of the retina. A particle of oil might have passed through the internal angular vein, and then through the heart, so that it became comparatively hard by the time it reached the central artery of the retina. This being the case there was no reason to believe that it could be removed by the method (massage) tried, and which was sometimes successful in ordinary cases of embolism of the retina. It was quite possible that small arteries in other parts of the body had been plugged by the paraffin from time to time, but being vessels of no importance this had not been noticed. It was most unfortunate that this accident should have occurred, but equally fortunate that Dr. Hurd had reported it as a warning to others.

DR. HARMON SMITH was inclined to think that this embolism might have been a coincidence, and called attention to a recent case of retinal embolism which had occurred without paraffin injection

or other obvious cause. In the case reported, paraffin and petroleum jelly had been used, and it was probable that some of the petroleum jelly had escaped into the venous circulation. It was certainly more dangerous to inject the paraffin while liquid than when it had become solid in the syringe. The latter was the method he employed, the paraffin being allowed to remain in the syringe until hard for half an hour, if necessary, before using. He thought compression, made by the fingers of an assistant, was far better than the use of a ring or any mechanical device. He was of the opinion that a plug of paraffin of the size which would plug the central artery of the retina would be apparently too large to pass through the circulation in the lungs.

Case of Epithelioma of the Tonsil Involving the Pharynx.

DR. FRED. KAMMERER presented a man of seventy-one whom he had first seen about six weeks ago. For three or four months the man had noticed a more or less painful swelling in the mouth. On examination, a large ulcerated mass involving the faucial pillar and extending to the left lateral wall of the pharynx and beyond the middle line, was seen. He did what was known as the Mikulicz operation, removing the lower submaxillary gland. The inferior maxilla was divided in front of the angle by means of a Gigli saw; and the bone was disarticulated after turning back the periosteum. The cavity was tamponed with a Mikulicz tampon, and the external wound sutured. He did not favor preliminary tracheotomy for these operations, believing that it predisposed to pneumonia, and that it was, after all, an unnecessary procedure.

DR. LUC, of Paris, was introduced by the Chairman, and asked to take part in the discussions. Dr. Luc said that one of the well known surgeons of Paris made use of the operation employed in this case. He had himself witnessed the operation and had been impressed with the ease with which the tumor was reached. It was also interesting to note that exactly the same conclusion had been arrived at by that surgeon with regard to the danger of preliminary tracheotomy.

THE CHAIRMAN also emphasized the danger of preliminary tracheotomy.

New Instruments.

DR. WENDELL C. PHILLIPS exhibited a simplified Lilienthal operating table, which he thought would be found useful by laryngologists in private operations.

He also showed an enamelled castor bottle-holder, which made a very neat and convenient office fixture. He had first seen the in-

strument used by Dr. McKernon, and had had it made of enamel ware.

Some Remarks on the Etiology of Hyperplasia of the Pharyngeal Tonsil in the Light of Recent Investigations.

DR. THOMAS J. HARRIS read this paper. He said that histologically the adenoid growth was usually identical with the normal lymphoid tissue in this region. It must be constantly borne in mind that the adenoid was a hyperplasia and not a new growth. Dieulafoy had found tubercle bacilli in as many as 20 per cent of cases examined. Many cases of pulmonary tuberculosis, however, showed no tubercle bacilli in the growth. A most plausible theory was a direct or indirect association with scrofula or struma, but many of the symptoms of this condition were known to disappear after the removal of the adenoids. Meyer had shown that the Hebrew race was particularly susceptible to this hyperplasia. Massini's studies with regard to vital capacity and hypo-oxygenation were quoted, and also Bosworth's observation regarding the tendency to lymphoid enlargement in early life. The potent influence of recurring inflammations was admitted by all observers. The author said that it had not been his experience to find that the majority of these cases required post-operation treatment. Scarlet fever, diphtheria and typhoid were generally conceded to be among the inflammatory causes. The function of the tonsil was then considered in the belief that this had an important bearing upon the etiology of adenoids. The recent work of Bringen in this direction being referred to and quoted from. Special emphasis was laid upon the bacteria-resisting power of the tonsils. The author's conclusions were (1) The pharyngeal tonsils possesses certain functions; (2) These functions are of the nature of a defense against the entrance of bacteria, and consists in the irrigation of the surface by a lymph stream loaded with lymphocytes; (3) this carries with it the inherent power of the tonsil to enlarge; (4) this inherent tendency is further seen in the recurrence of the tonsil after removal; (5) in the great majority of cases such enlargements are not a pathological but a physiological process.

Report on Some Cases of Throat and Nose Diseases Treated by the X-Rays.

DR. J. EDWARD STUBBERT presented this paper. He said that in his own experience he had observed that in active cases of mixed infection daily exposures to the x-ray produced a decided diminution in the number of cocci in the expectoration. Several observers had already insisted upon the bactericidal action of the x-ray. The

first case reported was one of a new growth of the tonsil diagnosed as sarcoma by a number of physicians. After treatment for some time by the X-ray the growth entirely disappeared, but just about this time the man developed a severe gastro-intestinal disturbance, associated with marked cachexia. He was now dying, though the diagnosis of the present condition was uncertain. In a second similar case retrogression sepsis suddenly developed, necessitating operation for evacuation of pus. A case of tuberculosis of the larynx complicating pulmonary tuberculosis, and one of tuberculosis of the tonsil were reported. The latter improved more rapidly and decidedly than under the usual treatment. In a case of submucous hemorrhage of one vocal cord the application of the x-ray caused a prompt blanching of the cord. The next case was one of lupus of the nose, which had done well under x-ray treatment.

Hypertrophic Lingual Tonsil in a Child.—FRANK G. NIFONG, St. Louis—*St. Louis Courier Med.*, April, 1903.

A male white child, aged 23 months, with healthy parents, and no tubercular or hereditary tendencies, began to have trouble in breathing together with the peculiar sound similar to that of whooping cough during inspiration, termed by the mother the "draw." There was no cough, and, except for the dyspnea and the "draw," the child was quite healthy. The symptoms increased, dysphagia developed, and a croupy cough was excited by swallowing solid food.

A laryngoscopic examination was unsuccessful; the child was well nourished, a mouth breather, though he did not have complete occlusion of the nares. Dyspnea was marked—so marked that he was sent to the surgical clinic with the suggestion to the mother that tracheotomy might have to be done. Heart and lungs were found normal; faucial tonsils not excessively enlarged; adenoid growth in vault of pharynx not large. A large mass of tissue was found at the base of the tongue, in the glosso-epiglottic fossa, and seemed to partly surround the epiglottis. The tongue could be protruded but a little beyond the teeth, although the frenum was not stretched. This soft pulpy mass of tissue was continuous with the tongue and epiglottis, almost enveloping the epiglottis.

Under anæsthesia the post-nasal adenoids were removed. With the fingers the tissue in the glosso-epiglottic fossa was separated from the epiglottis, and scraped out. The tongue could now be drawn out to normal length. Next day there was marked improvement—only slight spasm of glottis. In a few weeks they had disappeared.

EATON.

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SELECTED ABSTRACTS.

A Rare Anomaly of the Lateral Sinus.—GEORGE H. POWERS—

Occidental Medical Times, November, 1902.

A man aged 40 had suffered for nearly four months with purulent otitis media, and showed a beginning paralysis of the facial nerve. There was rough bone in the middle ear.

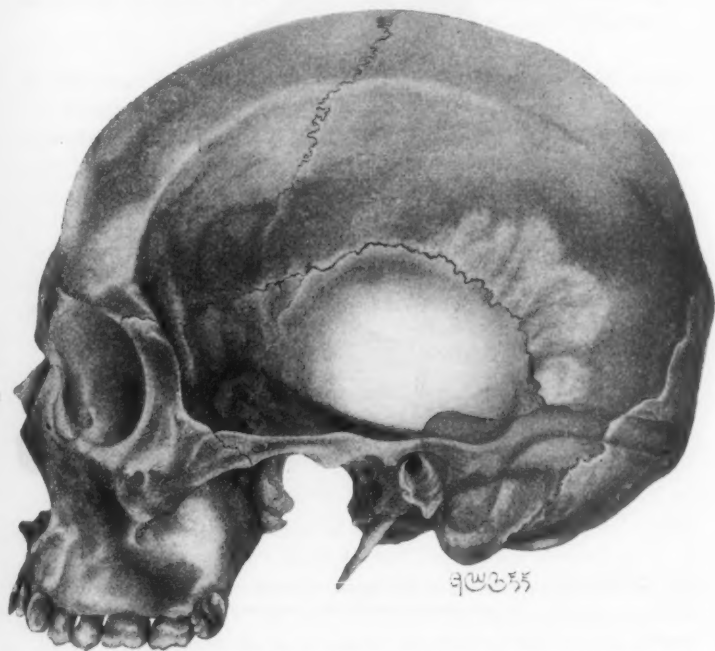


Fig. 1. Topographical relations of the sinus with special reference to McEwen's triangle and the fossa mastoidea.

As the first step in freeing mastoid, middle ear and antrum, Powers, in an effort to enter the antrum, came upon the lateral sinus, which seemed to be in an unusual position. Avoiding that spot without injuring the walls of the sinus, and continuing in an effort to reach the antrum, two unsuccessful attempts were made in which the sinus was entered, and the operation finally abandoned. The mastoid cells were then opened.

Afterwards the facial paralysis became complete, and the patient died.

A complete autopsy was denied, but permission was given to remove the temporal bone. On its cerebral aspect it is seen that the sigmoid sulcus containing the transverse sinus instead of turning sharply and forming only a slight groove between the pars petrosa and the squama temporalis, it extends so far ventralward



Fig. 2. Facial cerebralis of the temporal bone, showing the abnormal position of the sinus transversus with foramina made during the operation.

that, with the exception of a slight bridge of bone on the anterior aspect of the anterior pyramid, these two portions are completely separated.

The topographical relation of the sinus are shown in Fig. 1, where it extends above the mastoid crest some 0.7 cm., ventralward to the external auditory meatus, and caudalward to a point within 0.7 cm. from the tip of the mastoid process.

EATON.

Death from the Bursting of a Tonsillar Abscess.—F. DE HAVILLAND HALL—"Lancet," September 27, 1902.

Almost all the writers on diseases of the throat mention the possibility of this occurring, and a few cases are scattered about in medical literature. There is one, for example, in Sajous's "Annual of the Universal Medical Sciences," 1889, vol. iv., E. 13. The author examined a young woman suffering from quinsy who died suddenly the following night, and at the necropsy the larynx was found to be full of pus. In most of the fatal cases the abscess was ruptured during sleep. The risk of this accident occurring emphasizes the importance of incising the tonsil in cases of suppurative tonsillitis.

STCLAIR THOMSON.

Death from the Bursting of a Tonsillar Abscess.—ALEXANDER LYONS—"Lancet," September 20, 1902.

A man, aged twenty-eight years, was admitted suffering from a very large suppurative tonsillitis on the left side. He was given a warm bath and put to bed, where he partook of a glass of milk. About half an hour afterwards the nurse in charge of the ward heard him coughing feebly, and on going to ascertain the cause was surprised to find him cyanosed, and the patient was dead in five or six minutes.

At the post-mortem examination it was found that the abscess had burst, and that a large amount of pus had got into the upper part of the larynx.

On looking up the literature on the subject, the writer finds only one case of a similar kind recorded—viz., by Hilton Fagge.

STCLAIR THOMSON.

Some Functional Neuroses of the Throat.—P. MCBRIDE—*Edinburgh, Med. Journ.*, Aug., 1902.

The writer describes some interesting cases of functional disturbance. One was a case of probable pharyngeal whistling, where the sound appeared to be produced by passing through a narrow channel formed by the faucial pillars laterally, by the soft palate above and the tongue below. Another case described was that of inspiratory spasm co-existing with functional aphonia. He points out the possibility that exists of confounding this spasmodic condition with bilateral abductor paralysis. In the former there is an entire absence of noise during sleep and further, after the nose and mouth have been held shut for a few moments, a full quiet inspiration can then be taken by the patient.

A. LOGAN TURNER.

Myiasis of a Pharyngeal Divertikel (Diverticulum)—E. A.

JOHNSON (Adelaide, Australia)—*Australas. Med. Gaz.*—Jan. 20, 1903.

Four years before he was seen, the patient, a man of 24 years, had pleurisy in left side. He recovered but a cough had persisted since. Five weeks after this attack he ran after a car and hemorrhage followed this exertion, and about one pint of dark colored blood was spat up. He had no relapse and soon entirely recovered. One year ago he was lifting some heavy weights when he spat up about one ounce of blood, and for a week or two afterward his phlegm was blood-streaked.

On April 30th, of this year, he had, at 9 a. m., a tickling in the throat. This was followed by a coughing fit lasting five to ten minutes, when a big piece of phlegm was expectorated upon the floor. His brother was present, and noticed the "phlegm move," so he picked it up and put it in a bottle for examination. There has been no return of expectoration and the throat has been much easier.

On examination results of old pleurisy were heard on the left side and posteriorly; right side normal, heart normal. Nothing could be found in the throat.

On examination of the expectorated mucus a maggot of the blue-bottle fly was discovered.

EATON.

Tuberculous Laryngitis—J. CLARENCE SHARP (New York)—N. Y. Med. Journal. February 7, 1903.

The author does not believe that primary tuberculosis of the larynx ever exists, and further remarks that local treatment of the organ has given away to non-interference. He hopes that this policy of leaving the larynx alone will continue.

Good results are obtained by the author from the internal administration of beechwood creosote in ascending doses in cases where the infiltration and pulmonary involvement is not far advanced, though ulceration of the larynx exists.

He employs the U. S. Solution of Morphine for the relief of cough. Where infiltration is present, a change of climate is demanded. Proper attention to diet and dress is also dwelt upon.

M. D. L.

Acute Inflammation of the Third or Pharyngeal Tonsil.—H. L. SWANE—*Yale Medical Journal*, August, 1902.

The author in a comprehensive article on acute inflammation of the third tonsils gives a good clinical picture of the disease and preludes same with the histological features and function of the pharyngeal tonsil.

In the local treatment of the condition the author advocates alkaline sprays or gargles with the addition of suprarenal solution.

The constitutional disturbances such as fever, headache, etc., are treated in the usual routine manner.

E. D. LEDERMAN.

Ablation of Both Mastoids, Followed by Extreme Variations in the Temperature of the Different Parts of the Body and of the Whole Body at Different Times, Etc.—E. E. HOLT—*Maine Journal of Medicine and Science*, May, 1902.

In an unique and unparalleled case the author gives the history of the case, viz.: Ablation of both mastoids for chronic suppurative inflammation of the middle ear, followed by extreme variations in the temperature of the different parts of the body at the same time, and of the whole body at different times of more than twenty degrees Fahrenheit, there existing extreme high temperature in the mouth ($114\pm^{\circ}\text{F.}$) ($45.5\pm^{\circ}\text{C.}$) with extreme low temperature in the rectum (94°F. , 34.4°C.) then changing to low temperature in the mouth, with extreme high temperature in the rectum. Again changing to extreme high temperature in both the mouth and rectum, to be followed by extreme low temperature in both the mouth and rectum the extremes of temperature not being measured by any available thermometer that registered from 94°F. to 114°F. and four thermometers were broken by the intense heat. The author goes on, giving the pulse, respiration and temperature—at various times showing a marked fluctuation in all three. Later on amblyopia developed in both eyes. The case resulted in complete recovery. The temperature, etc., chart in the articles is interesting, showing above variations.

E. D. LEDERMAN.

Death after the Removal of Tonsils and Adenoids in a Haemophilic Child.—FRANCIS J. STEWARD—"Lancet," November 15, 1902.

A boy, aged seven years, was admitted for enlarged tonsils and adenoids. Ether was administered, and the tonsils and adenoids were removed in the ordinary way. Hemorrhage at the time of the operation was free, and the patient lost considerable more blood than is usually the case, a good deal being swallowed and subsequently vomited. The bleeding, although excessive, stopped spontaneously, and the patient was put back to bed, when it was noted that the pulse was 160 per minute and very feeble. At 11:30 the pulse had improved, but it was found that both sides of the neck and also the left cheek were considerably swollen from blood extravasations. These swellings steadily increased, and in a short time reached the sternum and clavicles, the patient becoming more and more anæmic, and the pulse more feeble and rapid. No further bleeding took place into the mouth or naso-pharynx. He was ordered ice to suck and enemata of half a drachm of calcium chloride every hour. In the evening dyspnoea gradually developed, and it was found that extravasation of blood was taking place into the pharyngeal submucous tissue. The dyspnoea becoming urgent, intubation was performed at 1 a. m. on the 20th. The relief afforded was, however, only temporary, and at 4 a. m. tracheotomy was performed. Considerable bleeding took place from the tracheotomy wound, but this was checked by the application of adrenalin chloride solution. The general condition, however, became progressively worse, in spite of stimulants and saline infusions, and death took place at 6 p. m., thirty-two hours after the operation.

Necropsy.—At the post-mortem examination the pharynx, larynx, and the tissues of the neck generally were found to be infiltrated with blood. The thymus was much larger than usual. No other abnormality was found.

Although, on inquiry, no definite evidence of hæmophilia in the family or in the previous history of the patient was obtainable, there can be little doubt that this was a severe and quite unsuspected case of hæmophilia. This is borne out not only by the severe hemorrhage at the operation and the extravasation of blood into the neck, but also by the marked tendency to bleeding, which was evidenced both in the tracheotomy incision and at the site of the needle punctures where the saline infusions were made.

The case is certainly peculiar, on the other hand, in that no bleeding occurred from either the site of the tonsils or from the naso-pharynx after the time of the operation, whereas steady and progressive extravasation of blood took place into the submucous tissues of the pharynx and larynx, and also formed large swellings in the left cheek and on either side of the neck. Moreover, this peculiar form of hemorrhage precluded any attempt at local treatment.

STCLAIR THOMSON.

Adenoid Growths in Children—J. E. SCHADLE. *St. Paul Medical Journal.* January, 1903.

A most thorough and excellent review of this important subject is given by the author, and to be fully appreciated must be read in its entirety.

STEIN.

On the Radical and Rapid Cure of Chronic Frontal Sinusitis.—

GORIS—*Rev. Hebd. Laryngologie, D'Otologie et de Rhinologie*, April 11, 1903.

The author limits himself to cases of chronic suppuration of the frontal sinus due to disease of the ethmoidal cells. He passes over the attempts to cure of this condition by way of the nasal passages, as he considers them both dangerous and insufficient. He then demonstrates the lack of success in the so-called radical methods. The method of Ogston-Luc has the great inconvenience of preserving the cavity of the sinus in which the suppuration usually recurs, and which always requires prolonged treatment. The method of Kuhnt, which preserves the inferior wall of the sinus, prevents the adherence of the soft parts along their whole extent and causes an open fistula very rebellious to cicatrization, and leaving behind a marked deformity. In order to remedy these defects, the author has recourse to the following method:

In one set of cases, he suppresses entirely the cavity of the sinus. After trepanning the sinus, and laying open the anterior wall, he loosens the periosteum from the superior orbital wall and from the internal angle of the orbit, and then removes the inferior wall of the sinus as far as the internal angle of the orbit, the sinus being thus entirely suppressed.

In the second class of cases, he cuts in the infundibulum a large canal so arranged as to permit secretions which accumulates in the internal angle of the orbit, to run out, destroying at the same time the anterior portion of the ethmoidal cells which in such cases are always diseased.

The exposed surface is then cauterized with chloride of zinc, and a large drain is placed in the enlarged infundibulum. An endermic suture followed by a firm tamponnement ends the operation. The fourth day, the drain is removed, and about the sixth day the adherence of the tissues with the posterior walls of the sinus is completed, and the cavity of the sinus is also radically cured.

W. SCHEPPEGRELL.

Primary Tuberculosis of the Ear Followed by Mastoiditis; Report of Four Cases.—M. A. GOLDSTEIN—*Medical News*.

March 14, 1903; *Journ. Laryngol.*, March, 1903.

The author premises by quoting a half dozen authorities to show that tuberculosis of the ear, secondary to and associated with tuberculosis processes in other parts of the body is not of infrequent occurrence. The statistics of these authorities showing from 2 4-10 to 81 5-10 per cent of tuberculous invasion of the ear in post-mortem and living cases affected with tuberculosis elsewhere. These statistics are from the summary of Bruck.

Bobone, Von Breuning, Gottstein and Morpurgo, in 1883, were first to record localized tuberculous invasion of the ear, and which was about the time of Koch's first description of the bacillus tuberculosis, first made possible the certain diagnosis of *primary* tuberculosis of the ear. Only three of the thirty-three cases of otitis tuberculosis, thus far published have been positively determined as primary tuberculous lesions. It must be conceded that it is extremely difficult to make a positive diagnosis of primary tuberculosis of the ear, because of inability to eliminate slight, old pulmonary lesions which may have become encapsulated or systemic tuberculous lesions elsewhere, where such original foci are not revealed even on most careful and repeated physical examination.

As the pulmonary tissue is the place of least resistance to the bacillus tuberculosis, we assume that most tuberculous processes have their origin there; but nevertheless it is true that recent clinical and pathological research demonstrates that a tuberculous infection may occur in the upper respiratory tract before the lungs are involved, and this is borne out by our knowledge that the bacillus tuberculosis is frequently found in even healthy pharyngeal mucosa, that the predisposition to tubercular infection includes a mucosa of the upper respiratory tract below par and that it is this same mucosa which first harbors the tubercle bacillus, placing this area in special danger of infection. We also know that there have been well-substantiated cases of primary tubercular infection of the tonsils, pharynx and larynx. From a bacteriological and pathological view, the ear should be considered an integral part of the upper respiratory tract because of its intimate association and direct continuity of its mucous surfaces with this region. It is generally believed that over 70 per cent of the inflammatory and infectious processes which involve the ear have their origin in the pharyngeal and naso-pharyngeal cavities. Hence it would seem to be logical to include tuberculous infections in this class. The author believes that the data

noticed justifies his conviction that a primary infection of the ear *per se* is not only theoretically possible but actually more frequent than a first consideration of the subject would indicate. To further substantiate this conclusion, he reports four cases.

Case 1. Colored male, 6½ years old. Patient contracted measles at three, from which he recovered without aural complications. Earache one year later of several days duration, followed by a copious, purulent discharge which continued for eighteen months. After seeing the case, he was lost sight of for two months. When seen again the discharge had stopped, but the entire external auditory canal was plugged with a viscid, cheesy mass, fetid and offensive, while the entire mastoid process was sensitive, presenting typical symptoms of mastoid infiltration. There was a small sinus over the apex of the mastoid. On entering the mastoid it was found necrotic, and the entire cellular bone structure had been converted into a rotten, cheesy mass. A careful physical examination on his first presentation gave no indication of a phthisical onset, so every precaution was taken to detect any change in the condition of the lungs. Three weeks later incessant coughing, profuse expectoration, rise in temperature, enlargement of the superficial lymphatic glands, rapid emaciation, great prostration and finally the involvement of the lungs, and later examination revealed the presence of the bacillus tuberculosis in the sputum. Several months later rapid developing miliary tuberculosis as an infection secondary to the aural disease was substantiated, as the pulmonary lesions and those of other organs in the body indicated the infection of these areas as subsequent to that of the ear.

Case 2. White, female, 32, history of mastoid fistula in childhood unattended. First seen June, 1899, with mastoid operation indicated. On exposing the antrum by the Schwartze operation, the whole area was found to be filled with unhealthy granulations and suspicious-looking deposits. Examination revealed the presence of the bacillus tuberculosis, almost in pure culture. A thorough physical examination failed to show involvement in other regions. The wound began healing satisfactorily, but later granulations filled the site, and a stubborn, scanty discharge was maintained. Unfavorable symptoms continued until November, 1899, when the radical operation was performed. Along the direct tract of the antrum and tympanic cavity there were indications of reinfection. A thorough curettement was made of the entire mastoid cell structure of the antrum and tympanic cavity. When last seen, one year ago, the wound had completely healed, general condition of the patient im-

proving, with no tubercular involvement apparent after repeated, careful examination. In the interim between June 10, 1902, the date of reading this paper, and December 10, the date of sending this MS. for publication, the patient again presented herself. A small sinus was found extending into the petrosa, with intermittent pain radiating from the mastoid area. A third operation was done October 25, 1902. The entire mastoid area was freely exposed and found filled with healthy granulations. The site of the reinfection proved to be in the superior wall of the cavum tympanum and aditus. A thorough curettement was done. At this writing, December 10, patient is doing nicely, with no signs of reinfection. A guinea pig which was inoculated with the material from the wound by a bacteriologist showed no infection.

Case 3. White, female, aged 8. History of chronic suppurative otitis media of six months, following scarlet fever. A Schwartze operation revealed granulation tissue and foul-smelling detritus. Large numbers of giant cells and groups of pure culture of tubercle bacilli were found. No clinical evidence of specific infection until the mastoid cavity was exposed. Child was well nourished and apparently healthy. Made an uneventful recovery and is well to-day.

Case 4. Male, colored, 58. Applied for treatment in 1896 for chronic suppurative otitis media, right of about seven years duration. Cavity was found filled with granulations and a thin, greenish, foul-smelling pus. Curettement was made, and several small carious areas in the attic were determined. The patient was then lost sight of, but the material removed revealed the tubercle bacilli.

From these cases, the author thinks all point to definitely localized specific infection of the cavum tympanum and mastoid cells, with the characteristic development of a tuberculous process as it occurs in bone tissue, and with the definite demonstration of the bacillus tuberculosis in each case.

F. C. E.

BOOK REVIEWS.

Die Krankheitender Oberen Luftwege. Ausder Praxis fuer die Praxis. By PROF. DR. MORITZ SCHMIDT, Frankfurt A. M., third enlarged and revised edition, 182 illustrations, 7 lithograph plates, pp. 960, bound in canvas cloth. Publisher, Julius Springer, Monbijouplatz 3, Berlin, 1903. Price, 18 marks.

There is an inestimable and unusual value to this volume, one not always found in the modern treatise and text book devoted to these specialties. From cover to cover this book contains the individual observations and experiences of a painstaking and careful worker, a special practitioner of over thirty years active experience in this field of medicine and surgery, and the product of an independent and original mind.

Prof. Moritz Schmidt is a pre-eminent example of the old school specialist who has always kept pace with the rapid progress made in our sciences, and as such, his ripe experiences, graphically and explicitly recorded in this third edition of his excellent work, presents a most valuable treatise.

Not only is the subject matter treated from the standpoint of the specialist, but due consideration is also given to the relations of special anatomy, pathology and therapy to the general system. In fact, this comparison of special to general medicine, forms the chief feature of this work.

We know of no volume pertaining to the upper respiratory tract in which therapeutic measures and their varied forms and applications are so minutely and exhaustively considered. Space will not permit a more detailed description of the many excellent chapters, but we are pleased to go on record with the observation that this is the best modern classic and treatise on affections of the upper respiratory tract in the German language. M. A. G.

Progressive Medicine. Fifth Annual Series. Volume II, June, 1903. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 427 pages, with 46 illustrations. Per volume, \$2.50, by express prepaid. Per annum, in four cloth-bound volumes, \$10.00. Lea Brothers & Co., Publishers, Philadelphia and New York.

This volume of Progressive Medicine offers but little of special interest to the Laryngologist and Otologist, but these specialties will be considered in a subsequent volume.

This volume contains a chapter on Ophthalmology under the able editorship of Dr. Edward Jackson, and such matter may appeal to many of our readers who may be interested in this specialty. M. A. G.

Die Krankheiten des Kehlkopfes und der Luftröhre. Mit Einschluss der Laryngoskopie und Lokal-Therapeutischen Technik, fuer Praktische Aerzte und Studierende. By PROF. DR. PHILIP SCHECH, Munich, second revised edition, 89 illustrations, pp. 332, paper bound. Publisher, Franz Deuticke, Leipzig, Germany, 1903. Price 7 marks.

Local therapy and operative technique are the special features of this work. The pathology and symptomatology of this special subject matter is rather briefly considered, but we observe that Differential Diagnosis and Therapy are minutely recorded.

In this second edition there have been added chapters on Affections of the Voice of singers and professional speakers, and Voice Abnormalities. The chapters on Laryngitis Exsudativa, Laryngitis Ulcerosa and Stenosis of the Trachea have been thoroughly revised. The volume includes an extensive bibliography.

M. A. G.

How to Succeed in the Practice of Medicine. By JOSEPH McDOWELL MATHEWS, President American Medical Association, 1898-'99; 216 pp., cloth, 6 illustrations and frontispiece. John P. Morton & Co., Louisville, Ky., publishers. Price, \$2.00.

It is not only a pleasure to meet the successful practitioner of medicine professionally, to read their contributions in the medical press and to hear their discussions in the convention hall, but it is also an agreeable diversion to read the reminiscences and early experiences which have contributed to a successful professional career.

Dr. Mathews represents the successful practitioner American gentleman; a careful student and a progressive surgeon, and as such, this volume of personal reminiscences offers much food for reflection, and data for self-improvement.

M. A. G.

